AN INTRODUCTION TO TEACHING AND LEARNING

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AN INTRODUCTION TO TEACHING AND LEARNING

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PREFACE

Experience with the training of teachers in both teachers colleges and schools of education has convinced the writers that, ordinarily, courses in training fail to bring about profound changes in the attitudes, information, skills, and habits of prospective teachers, and that they often go into service with a great deal of unassimilated information and with such a lack of the fundamental techniques of teaching that they remain very indifferent craftsmen. It is the profound conviction of the authors that much of this may be due to the fact that in teacher-training institutions, as well as in public and private schools, there has been a great deal of memorizing of books and reciting of unassimilated matter without a real mastery of the principles involved. It has been the purpose of the authors, therefore, to encourage a better assimilation of the material available on the techniques of teaching by working out a parallel series of units of study which may result in better mastery of fundamental principles, so that they will affect the technique of the teacher in practice.

To this end, a Manual of exercises in the *Directed Study and Observation of Teaching* was first prepared. Sample units of these exercises were tried out in classes in Introduction to Teaching, and were found effective. A series was then worked out consisting of twenty-five exercises in the techniques and activities of teaching and learning which cover types of teaching and learning in a fairly complete way. When these exercises were completed, the assimilative material useful in working out the exercises was next pre-

pared. This material constitutes the content of the present book.

An Introduction to Teaching and Learning is an attempt on the part of the writers to furnish, in simple form, a discussion of the basic activities and techniques involved in teaching. While the basic philosophy of the writers agrees with the current belief that children learn best by doing, and that the presence of effective and purposeful activity in the classroom is the best criterion by which to judge success in teaching, it also embraces the idea that the possession of techniques is an important qualification for the teacher and that no teacher is a good teacher who is not a master of effective techniques. Teaching is an art. Individual teachers may vary in the types of techniques which they employ, but research and experience in education and psychology have developed fundamental principles of technique that are observed by all good teachers. It is the purpose of this book to furnish discussions of these principles in as concrete form as possible for the use of prospective teachers. Although closely related to it, nevertheless this present volume is not merely a collection of answers to the problems raised in the accompanying Manual, but an independent Textbook which may be used with or without the Manual. It does not answer completely the problems propounded in the Manual, nor does it make the problem of assimilation merely a reading of the problems in the Manual and a finding of the answers in the Textbook. Such a procedure would be contrary to the principles advocated by the authors and would result in a narrow experience not likely to result in the mastery of the principles.

The authors strongly recommend that the Workbook be used as a guide to the study and observation of teaching, and that the Textbook be used as a classroom text for use

in discovering the principles for which the student is searching. It is possible to give a rich course in Introduction to the Techniques of Teaching by the use of these two books, supplemented with observations in practice or public schools, but a much richer and better course will be developed when the reference material in the Manual, *Directed Study and Observation of Teaching,* is used as much as possible. The student will be trained in the use of reference material, in comparing the ideas of different authors on the same problem, in noting agreement and disagreement, in evaluating actual teaching situations in terms of the principles developed, and in testing assimilation of the whole unit of investigation by use of the assimilation test. At the end of such an experience the student is more likely to be permanently affected than if he uses the Textbook alone for the assimilative material necessary to work out the exercises in the Manual.

It has been the purpose of the authors to stimulate the student to exercise his judgment as much as possible, to encourage original thinking about problems, and to make it necessary for the student, at times, to search widely before he can find the answer to many of the problems proposed. At the same time, sufficient assimilative material is given in this Textbook for a rich course in the study of these techniques.

In addition to its use as a basic text in courses in Introduction to Teaching, this book will be of interest to teachers and supervisors in general because of its treatment of the newer types of learning which have received increasing emphasis in the past few years, and because of the revaluation of older techniques in terms of the newer educational philosophy.

The writers are obviously indebted to previous writers on

the same subject for ideas used in this book. They also wish to acknowledge particularly their indebtedness to Dr. Gladys M. Hathaway, of the Frick Training School, Pittsburgh, for trying out certain units of the study guide in her classes in Introduction to Teaching and for critical reading of the entire manuscript and galleys.

G. A. Y.
R. G. S.

Pittsburgh, Pennsylvania
May 1, 1934.

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AN INTRODUCTION TO TEACHING AND LEARNING

PART I

FUNDAMENTAL PRINCIPLES

The principles governing learning and teaching change in response to changes in the philosophy of education and understanding of the nature of the learning process. New social theories bring about changes in the ideas of educational leaders concerning the fundamental principles of teaching. The study of the learning process in laboratory and classroom constantly adds to our knowledge of the nature of learning. Biology furnishes its quota of facts concerning the physiological basis of learning. These changes make necessary periodical summaries of fact and restatement of the fundamental principles which are believed to be true as based upon the evidence so far accumulated. In Part I, this textbook attempts to state fundamental principles of teaching and learning as they are understood by the writers. There are fundamental differences in the opinions of different authorities on teaching and learning. In so far as possible, the writers have attempted to harmonize divergent views and develop a working philosophy of learning and teaching.

CHAPTER I

THE FUNDAMENTAL ASPECTS OF TEACHING AND LEARNING

Introduction. Teaching and learning are complex aspects of that thing which we commonly call education. On the one hand there is the teacher who is to instruct the child; and on the other hand there is the child who is to learn. There are activities and techniques that belong to the teacher *per se* and with which the child has little or no direct concern; and there are activities which touch the child directly and with which he is greatly concerned and occupied. An introduction to the activities of teaching would not be complete without an attempt to analyze and discuss the work of the teacher from both angles: (1) from the point of view of those things which concern her as a professional worker, such as classroom management, lesson planning, assignment, direction of study, etc.; and (2) those things which concern the child directly and which may be recognized as learning activities in the techniques of which he must become expert in order to profit by his education.

Teaching and learning are such complex activities, however, that to learn all about them in detail is the work of a lifetime. It becomes necessary, therefore, in introducing the student to the work of the teacher to select those fundamental aspects of the work that occur again and again and to develop the principles which should be observed in dealing with them as organizing centers from which to approach the whole complex body of details involved in teaching. Almost every teaching situation involves, at one time or

another, management, planning, assignment, directing study, guiding recitation and discussion, and the testing of results. Diagnostic and remedial work are often a part of the teaching process. The technique of questioning and the use of discussion are tools constantly used by the teacher in her attempts to teach children. The fundamental principles which govern, or should govern, the teacher's activities and her use of techniques constitute, therefore, an approach to the study of teaching which, when properly developed, should enable the student to get a general view of teaching and orient himself with respect to this complex art.

To study teaching, however, with no consideration of the corresponding activities of the child, the learner, would be to get a very incomplete and inadequate view of the work of the teacher. Learning is so complex that here again certain focal points must be selected from which to get the first approach. In this volume, those points are concerned with the fundamental learning activities of children—observational learning, motor learning, associative learning, problem-solving, creative learning, experimental learning, and appreciation. Then follows a discussion of certain typical language activities and techniques which the child uses in getting acquainted with his world; conversation, story telling, dramatization, reporting, discussion and reading. Finally a discussion of integrated teaching activities is attempted. The student from this discussion should get a general view of the activities of the learner common to a great many subjects. This knowledge will stand him in good stead until experience shall have made him more familiar with the detailed activities and techniques of learning as they are encountered in connection with the varied subjects and activities of the school. The study of this book, together with the observation of actual teaching in a prac-

tice or observational school should, then, be followed by a course in specific methods of teaching the different subjects or of directing the major activities which are included in the programs of the elementary or the secondary school. This book will be most effective and understandable when used in connection with the accompanying manual and study guide, *Directed Study and Observation of Teaching.*[1]

The purpose of the present chapter. In the remainder of the present chapter an effort will be made to discuss the general nature of teaching and learning, their relation to each other, and the purpose of both teaching and learning in a general scheme of democratic education as it is understood today. In this way, a background for a discussion of the work of the teacher in Part II of this volume and for the discussion of the work of the learner in Parts III, IV, and V will be developed.

Education involves teaching and learning. Teaching and learning are activities of life. They go on irrespective of schools. Life itself means constant modification of experience. Ideas are in a state of constant flux. Attitudes are being modified and knowledge is changing with each new day's experience. What is true today is proved untrue by the discoveries of tomorrow. Skills are modified by each hour's practice or by each hour of disuse. Habits are either being more firmly fixed by use or being changed and modified by new types of experience. The most certain thing in the world is change.

Education is the process of guiding the individual in his ability to adjust himself to this changing world. The best type of education is that which enables the individual to meet life as it comes and to live it richly, to solve new prob-

[1] This manual is written by the authors of this book and can be obtained from the same publishers.

lems as they arise, to maintain health, to obtain the necessities of physical living in a physical world, to take his part in the family and the home, to adjust himself in civic life, to advance in the assimilation of racial experience through use of the tools of knowledge-getting, to use his leisure time in ways profitable to himself and to society, and to meet the needs of his spiritual life through better understanding of his place in a complex universe. Education is organized guidance of the immature individual in attaining adjustment to life; it is also the means of enabling him to make his own contribution to the life of his times and to make the world a better place in which to live, for himself as well as for those who come after him.

Education is both individual and social. It is individual in that it has due regard for the welfare and happiness of the individual. It is social because it cannot ignore the environment in which the individual lives and it realizes that no individual can live in the world without affecting certain other individuals who are most closely associated with him. Individual welfare is not possible without social welfare. Education trains individuals in order that they may adjust themselves to the complex society in which they live. Teaching and learning are the fundamental activities of education.

The nature of teaching. 1. *What it is.* Teaching is the means whereby the experienced members of the group guide the immature and infant members in their adjustment to life. In the animal world, in which the infants are often surprisingly mature when born, such teaching as is done by the adult members of the species is very brief and simple. In human society, the immaturity of the new-born makes it necessary that a long period of training, or teaching, be undergone. Life among human beings is very complex. Infancy is very helpless. From fourteen to twenty years are

necessary for the child to make his adjustments to life so that he may be trusted as a self-sustaining individual, equipped to be of use to himself and to the group in which he lives. In primitive life the period of infancy is shorter. Today the very minimum, set by law, of parental and institutional guidance places the threshold of maturity at eighteen years for the female and twenty-one years for the male in the most advanced civilizations. During this period, formal teaching takes place; afterwards modifications in the individual are the result of experience. He is taught by merely being alive and teaching goes on until the nervous system of the individual becomes so unresponsive that further modification of his behavior is either impossible or improbable.

2. *The purpose.* Teaching is the means whereby society trains the young in a selected environment as quickly as possible to adjust themselves to the world in which they live. In primitive society this adjustment has strict limitations. It means conformity with things as they are. In more advanced forms of society, an effort is made not only to maintain the *status quo* by conditioning the reactions of the young but to make some advance in the improvement of the conditions of life by training the young in modes of thinking and acting so that they need not be bound entirely by the past but may make new discoveries and new advancements in living.

3. *By whom performed.* Teaching is carried on by parents, brothers, sisters, and other relatives, church, policemen, magistrates, public lecturers, and teachers. Some of the most effective teaching is that which occurs before the child enters school; hence the present rise in parental education and the interest in the nursery school, pre-school and kindergarten. Language is learned and attitudes, ideals, habits, and certain fundamental abilities needed in social adjust-

ment are developed to a surprising degree before the child enters school and begins formal education. The mother is probably the most important teacher of the child up to the time of formal school entrance, although his education is truly a coöperative affair distributed among grandparents, parents, aunts, uncles, older brothers and sisters, and playmates. In advantageous situations, this pre-school training is of inestimable worth and prepares the child naturally for the formal education of the school. In other environments, the training or lack of training results in wrong types of development, or lack of development, which seriously retard the child and result in his being a problem case when he enters school.

Formal teaching and the standing of teachers. Formal teaching, as carried on by the school, is a responsibility delegated by parents through their civic organization to specially selected representatives of society known as teachers. This special group has existed in society for a long time. At times it has been highly regarded as made up of the wise men of its generation. At others it has been scarcely less exalted than the skilled artisan or upper servant in the home. Efforts are being made today to lift teaching to the status of a profession. To this end, schools, colleges of education, and teachers' colleges are being more and more widely developed.

Organized teaching and theories of teaching. Organized teaching is systematic instruction of the young in a selected environment. In some communities this environment is hardly better than the community in which it exists; but in most cases, the school brings the child into contact with an organized way of life, specially prepared for children and involving contact with selected experiences which the race has had in the past and which are believed of worth in train-

ing the child for his place in the adult world. This point of view of teaching has obtained for a long time. Recently it has been changing under the influence of a new philosophy which insists that education is not merely preparation for adult life and that the best type of education for the young is that which best meets the needs of children at each particular stage of their development. The group propounding this philosophy also insists that the child must be active in learning and that the time-honored principle of pouring in information and repressing childish impulse to action is fundamentally wrong, chiefly because it does not educate. The child-centered school is one in which the emphasis is upon better ways of living for children and upon activities which engage the interest and effort of children because they have value to them here and now. In such a situation teaching becomes a process of arranging the environment so that in it children purpose, plan, collect, organize, assimilate, report, reproduce, create, and carry on activities that are natural and valuable for them. The environment includes contacts with subject matter of the formal type; but all the experience of the child is subject matter, and teaching is a process of guiding him in experiencing things worth while in the modification of his attitudes, ideas, skills, habits, and appreciations through active experience. The most promising results from the application of this theory seem to the writers to be those in which organization of these experiences constitutes a reworking of such fields of human experience as literature, history, science, social studies, art, music, etc., from the standpoint of the child. The least promising are those concerned with the development of fundamental skills—reading, language, writing, and numbers and certain technical aspects of art, music, and industrial arts. There is one notable exception to this in a

system of beginning reading which seems to develop adequate skill in reading in an environment of activities which takes due account of the interests of children and provides for an abundance of activities which make the development of skill certain. It is through such experiments that an adjustment between the old education and the new will eventually come about.

Teaching as a skilled occupation. Teaching, since it is a specially delegated function, is or should be a skilled occupation, if not a profession. Skill in teaching implies an understanding of the fundamental aims of education, and a thorough familiarity with organized fields of knowledge in general as well as special knowledge in some particular field or fields. In the United States the practice of allowing teaching to be done by immature and poorly trained individuals delayed its development as a skilled occupation. In recent years, however, requirements for entrance into the profession have been raised in many parts of the country, a strong organization of teachers nation-wide in scope has been developed, and state and local organizations have enlarged in number and improved in character.

In addition to adequate training in subject matter, teaching requires training in organization of materials for teaching, in the management of teaching situations, and in both general and special techniques which are not acquired from general education and which must be studied and practiced before they can be mastered. These latter techniques are the subject matter of the following chapters in this book. To become a good teacher, the student must not only have a special aptitude for teaching and an inclination for it, a good general education, and special training in some special field, but must also spend some time as a student teacher in a practice school learning the techniques which are now

known to be necessary in order to teach well. That there are many in the past who have not undergone this initiation to the profession does not mean that such training is unnecessary. Certainly one might learn to teach through trial and success, just as medical doctors once learned medicine through reading with and assisting a licensed practitioner. But no doctor of medicine is allowed to enter his profession through this door at the present time. It is only a matter of time until the profession of teaching will prevent teaching from being a temporary occupation, carried on by members averaging three years in experience and entered as a result of a general high-school education or less, followed by six weeks of special training or more. To be satisfied with this low threshold of admittance to the profession is to confess its inadequacy and to cheapen its standing among people in general.

Teaching an art based upon science. Teaching is an art based upon a growing science of education. This science is young and has developed during the past half century. It includes the field of educational psychology and of experiments in the nature of learning. It draws freely from other fields, particularly biology, psychology, sociology, history, and philosophy for its special subject matter. It is a service science in that its objective is to study the development of children through normative, genetic, case-study, case-history, and experimental methods and to learn by investigation all that it can concerning the most effective means of school administration, including finance, school planning, organization and management, curriculum making, improvement of methods of teaching and learning, and improved methods of measurement. It touches all fields of human knowledge and attempts to discover ways and means of organizing these fields for the especial benefit of growing

children. While adult education is of growing importance, and while it is the growing conviction of many that education as a function of the State should continue in adult life, education as now organized is concerned primarily with the young in its scientific aspects. This scientific phase of education has developed out of the dissatisfaction of many with the time-honored authoritative view with its unsubstantiated objectives borrowed from adult philosophy, with its conflicting views of the nature of the learning process, and with its varied methods, devices, organizations, etc., conflicting in principle and all laying claim to the highest excellence. The science of education hopes to improve teaching; indeed, it has already done so to a marked extent, through subjecting objectives, subject matter, and method to measurement under controlled conditions and thus proving or disproving conflicting claims. The results of scientific studies of education are tremendously significant for teaching and promise many improvements in the teaching art. It is well to recognize, however, that as an art teaching is very old and that teaching as an art must be learned through teaching. Much can be learned from great teachers who have learned from experience. In fact, teaching as an art is subject to the same laws as other arts. Just as chemistry has improved the artist's colors so the scientific study of teaching will improve teaching; but just as the artist himself will improve his own technique through study and practice, so will the teacher improve his art through the use of better materials developed from research in education and psychology and through the adoption of better techniques proved effective through experiment in laboratory and classroom. Geniuses can afford, perhaps, to disregard the methods by which other less gifted mortals achieve whatever skill they possess, but the profession of teaching is not now com-

posed of geniuses and does not seem likely to be for some time to come.

Teaching a form of social service. Teaching is one of the most exalted forms of social service. The teacher as a servant of society is entrusted with the development of the most helpless of beings, the human young, regarded also as the most easily influenced of all creatures and most important for the maintenance of society as it is and for any future advancements that may be made. The opportunities of the teacher for good or evil are boundless. For this reason, society has insisted that teachers be known for their high character, their honesty, integrity, and virtue as well as for their knowledge and skill. To have it otherwise were unthinkable. The influence of the teacher's personality and character upon his pupils is incalculable. Character education, in which we are all interested, is impossible without teachers of high character which includes high ideals, good conduct, and sincerity of purpose. There must be, as well, a sincere love of children and a devotion to their welfare. The teacher must be a likeable human being, a humanist in the true sense of the word; for it is this human quality, the quality of sympathy with and understanding of children, that will be most effective in teaching. Without this quality a teacher can never be much better than an expounder of words, an actor mumming meaningless lines without giving life to the play through intense reliving of the words and intense desire to affect the audience. The high quality of the social service demanded of teaching requires men and women of high ideals and of engaging personalities as well as of sincere and noble purpose. It is only from such that humanity may realize adequate returns on its investment in schools and teaching.

The study of teaching. The nature of teaching demands that those who wish to be teachers shall make a serious study

of the art. It has its history; there are classics based upon teaching and upon great teachers. The importance of teaching requires that a study be made not only of its history, its philosophy, but also of its fundamental techniques and of its current practices. Without this study, the novice will fail to get a true understanding of what teaching means and will be unable to obtain from the practice of teaching the supreme satisfaction which it gives to those most devoted to it. Such a study of teaching should include an introduction to education in its larger aspects, in order that the student may know how to choose a field for study. Either concurrently or immediately following, a study of the nature of learning should be undertaken in order that the student may appreciate the function of teaching and how it may accomplish its function. This experience should be followed shortly by an introduction to the techniques of teaching and learning with abundant observation of actual teaching situations and with as wide reading as possible of the literature of teaching on the more technical side. General preparation should then be supplemented by practice in actual teaching and more careful study of special methods and techniques which the teacher is to use in her teaching. It goes without saying, of course, that parallel with this study of teaching should go a study of the major fields in which the teacher wishes to practice. This study of teaching should be conducted under the guidance of instructors ably trained in teaching, masters of the art of the analysis of teaching, and thorough judges of good teaching in all its aspects. Such study should be continued until the student has assimilated at least the basic principles of teaching.

Principles of good teaching. Good teaching is characterized by the observance of certain basic principles which

it will be the function of this section to enumerate and discuss.

1. *Good teaching is skilled in guiding learning.* Teaching is not a process of imparting knowledge to students nor of curbing undesirable traits and tendencies alone. In the process of teaching, knowledge is imparted and undesirable traits and tendencies are curbed, but good teaching consists primarily of guiding and directing the pupil and encouraging him to effort in learning. This guidance is done by suggestions rather than by command, and by the creation of situations which naturally lead to desired types of activity. Good teaching opens up fields for investigation, it introduces new materials, it suggests methods of procedure, and it aids the individual to estimate his progress. Teaching is a guided tour through the world of experience; the teacher is the courier but the excursion fails unless the pupils constitute a band of travelers into new territories anxious not to miss the sights. As a skilled courier, the teacher knows how to make the excursion seem worth the taking, but, after all, the excursion is a failure unless the pupils enjoy it. Guidance is essential at all stages of the journey: first, in setting up the objectives and making the plans; second, in furnishing the means of making the journey; third, in pointing out the objects of interest; fourth, in making these objects meaningful; fifth, in taking care of the physical welfare and comfort of the traveler; and finally in helping him to evaluate the experience so that he will wish to take the same or a similar journey again.

2. *Good teaching is kindly and sympathetic.* Good teaching cannot take place in a situation which is unkindly and unsympathetic with the interests and needs of pupils. The good teacher is well disposed toward his pupils, the backward as well as the brilliant. He knows that they are im-

mature and that they need his sympathy and help. Therefore, he attempts to create an atmosphere in his school which will seem homelike and pleasant. He avoids scolding and haggling. He attempts to have his organization run by virtue of its own intrinsic soundness and meaning for children. He knows that children must play as well as work; he realizes that his attitude and his personality will affect the pupils' temperaments in various ways. He seeks, therefore, to understand each child and to develop the teaching situation so that children will feel that the school is a good place to be in and that the teacher is a real person who knows all about children. Nor does this mean that he will allow children to have their own way continually and to run his school into disaster. He knows that children like to have neatness and good order and that they are happy when they have plenty of things to do. Accordingly, he will plan his work most carefully in order to keep children healthily busy at worthwhile things.

3. *Good teaching is well planned.* The good teacher has thought out his problem carefully in advance. He has made due allowances for the necessity of change but he has the main features of his activity well planned. If he is teaching a lesson in social studies, he has the main topics in mind; if the period is to be a practice period, he has abundant practice materials at hand. If he is directing an activity, he has a general view of the terrain ahead. The order and sequence of events is clearly in mind and provisions have been thought out for the management of the whole situation. At the same time, this plan is flexible enough so that it may be changed as need arises.

4. *Good teaching is coöperative.* The teacher who aspires to be a good teacher knows that teaching is a coöperative affair between teacher and pupils. He has planned, therefore, to

give the pupils abundant opportunity for coöperation in organization, management, participation in discussion, recitation, and evaluation of results. He knows that if he does all the talking, he must have a good excuse for doing so and that it is generally better to plan for much activity on the part of the children and to utilize their help in every way. In the classroom of such a teacher as here described, abundant activity among the children will be the rule.

5. *Good teaching is suggestive.* Good teaching proceeds on the basis of suggestion rather than dictation. The military spirit is not most advantageous for the well-conducted classroom. The teacher leads by virtue of his demonstrated power in leadership. This does not mean that pupils do not respect his authority and that at times he does not need to insist on courtesy, industry, responsibility, perseverance, and the like; it means that on the whole, the good teacher secures the operation of these traits through the creation of situations in which they naturally develop. The teacher suggests activities; he suggests aims, materials, and modes of response. Suggestion has the effect of provoking courteous response and inviting coöperation.

6. *Good teaching is democratic.* Good teaching attempts to produce a democratic environment in which the rights of individuals are respected. In this environment the teacher proceeds on the theory that each individual is entitled to equal rights with every other individual in the class and that he is subject to the same rules with respect to social equality as the pupils. Therefore, good teaching does not encourage subservience on the part of the pupils but rather confidence within each individual that socially he is the equal of his peers. Little John Henry Smith III is no better in the democratic classroom than Johnny Smith, the son of the junk man, but is entitled to participate in the activities of the

school on the same basis. Further both John Smith III and Johnny Smith are entitled to participate with the teacher in a democratic organization in which each has his part but must also respect the rights of others. Any other type of organization is unthinkable in a democracy.

7. *Good teaching is stimulating.* The emphasis placed upon pupil activity in the modern school sometimes seems to suggest that the teacher shall be a vague and formless personality in the classroom or a Banquo's ghost at the feast. That is far from the truth. The good teacher stimulates through his personality and his activities the personalities and activities of the pupils. The school environment is a selected environment and the activities are controlled. This means that the good teacher stimulates through teaching, through suggestion of new activities, through criticism and direct suggestion. His duty of leadership is not decreased but rather enlarged by the fact that he must think not only of his own activities but of the stimulation of the pupils to activity. He stimulates purposing and planning, collecting and organizing, reciting and discussing, evaluating and using, making and building, practicing and memorizing as such activities need stimulating and directing. Without the stimulating personality of a competent teacher a classroom would soon be a disorganized and non-effective agency for child training.

8. *Good teaching takes into account the past experiences of the children.* The expert teacher recognizes that education is in its truest sense the reorganizing of experience. It is necessary, therefore, to take into account the interests, attitudes, skills, and habits of children in proposing any new activity. It is also necessary to take into consideration the experiences of the teacher in previous contacts with the children, a consideration of proved and tried modes of procedure and of results

previously obtained. While open-mindedness as to new possibilities is characteristic of good teaching this cannot mean that the teacher puts behind him in each new situation that which he has learned in the old. There are general modes of procedure and tried and proved activities which enable the teacher to avoid errors in the new and which insure that the results of each new experience should be achieved more effectively than those of the last. Likewise, successes in the previous activities of children suggest ways of making new activities effective; past experience is necessary in both teaching and learning.

9. *Good teaching is progressive.* Satisfaction with the achievements that have been made and contentment with a situation in which no progress is being made do not characterize good teaching. The good teacher is highly concerned with the progress of children in the achievement of attitudes and interests, ideas and information, skills and abilities, and in the development of habits of thought and action. Likewise, good teaching is never satisfied with its modes of procedure but ever looking forward to improvement. When teaching is improving steadily, it is progressive. Progressiveness is a relative term and there are all degrees of progressiveness in American education, ranging from situations in which no progression is made at all, the absolute zero, to those in which the leaders are so far ahead of the masses that they are hardly within hailing distance. The wise teacher is as progressive as the situation will permit him to be. This situation includes the parents, administrative superiors, and the community as well as the children under his charge. Some situations allow faster progression than others; the wise teacher will gauge his rate of progression to the situation in which he teaches but will never give up the desire to teach a better school as time goes on.

10. *Good teaching diagnoses difficulties.* Good teachers have always had a wary eye for the learning difficulties of children. In recent years the development of measuring instruments has made possible better diagnosis of children's difficulties. It is true that diagnosis of difficulties in reading, spelling, writing, language, and arithmetic is rather more advanced than in social studies, science, literature, and other fields, but even there good teachers are much more sensitive to the needs of individual instruction than ever before. Some are even learning to use the case method in the study of individual children. There is much hope for increasing skill on the part of teachers in discovering and remedying the learning difficulties of children.

11. *Good teaching is remedial.* It follows from the preceding principle that good teaching must provide remedies for individual as well as for group difficulties. Skill in remedial work demands not only a broad general view of the problems of learning involved in a teaching situation, but acquaintance with a variety of devices and techniques for remedial work in the different school subjects. Remedial work is particularly important in subjects where skills are involved in which the failure to master one step prevents making progress in the next. Good teaching is becoming increasingly skilled in the use of remedial techniques.

12. *Good teaching liberates the learner.* The ideal of good teaching is to develop initiative, independence in thought and method of procedure, self-reliance and confidence among pupils so that eventually they will be able to attack their problems independently and work out solutions. Independent habits of study and independent achievements in work among pupils testify to good teaching. That type of teaching which dictates every move the child makes and which makes no provision for a gradual diminishing of

guidance is not good teaching, for good teaching liberates the mind through the development of good habits of thought and action and the perfection of skills and abilities needed in effective work. The ideal of good teachers is to liberate the child from teaching.

The nature of learning. 1. *Older views of learning.* It was formerly conceived that the child, a pliable organism with great potentialities for receiving impressions from without through the sense mechanisms, was chiefly to be taught as a passive recipient of verbal and visual impressions. Learning proceeded by means of teaching exercises in which the teacher was an expounder, a drill-master, and a disciplinarian. The child's part was to listen, observe, memorize, and repeat accurately what he had learned. Skill in reading was achieved through much practice on isolated lists of words and through phonic exercises divorced from context. In a similar manner history was learned through reading, memorizing, and repeating the textbook or memorizing the oral words of the teacher. The law of use was a constant factor and almost the sole reliance of the teacher in causing the child to learn. It was assumed that the natural inclinations of the child were against learning such facts, appreciations, and skills as the school thought important, and that subject matter and the child as such resided in two different worlds which must be bridged by such devices as preparation and presentation, extrinsic motivation, and the like. Discipline was an intermediary factor between the child and the subject which was used as a means of forcing the child to learn the subject. If enough pressure was brought to bear in the way of repetitions of the same type, and if enough dissatisfaction arose from the pain endured as a result of failure to learn, the child gradually became disciplined and docile, applied his will to learning, and be-

came able eventually to recite the words of the textbook, write the hand of a master-penman, spell long lists of meaningless words, solve arithmetic puzzles of no practical significance, and otherwise perform prodigies of aural, visual, and motor activity which prepared him for adult life. Education was a long and painful process of preparation and learning was not accessible by any royal road.

2. *A newer view.* Progress in the study of children and of the learning process as it is exhibited in the behavior of children has gradually modified this harsh view. Certain psychologists and philosophers, strengthened in their position by biological science and by sociology, have come to take different views of the learning process. One group regards learning as chiefly involved with habit formation and the conditioned reflex. Another regards learning as in the last analysis an intellectual process. Learning is *active.* Learning is a function of the total situation surrounding the child. Learning is guided by purpose and consists in living and doing; in having experiences and seeking to understand the meaning of them. Learning, in human beings at least, in its highest forms is an intelligent, a creative process, not a mere matter of stimulus and response, conditioned reflexes, and habit forming or strengthening and weakening connections between the stimulus and the response. Learning affects the whole individual; not merely one specific set of neurones and their connections, but many groups coöperating to produce a coördinated, unified pattern of behavior. Education is not a mere matter of conditioning the individual to a typical mode of reaction and of preparing him to meet fixed situations which recur again and again in the same form. Learning prepares the individual for new situations by enabling him to select the significant factors in them and to react, or adjust himself,

to them in a meaningful way. Learning has for its highest objective the ability of the individual to adjust himself to new situations intelligently. Education is concerned with the development of creative power in the individual. Since the future never repeats itself in the same manner as the past, the necessity for adaptability, resourcefulness, initiative, and independence becomes apparent. One of the greatest dangers that confronts the teacher is to adopt that concept of education which thinks of the future as a repetition of experiences of exactly the same patterns as those which have happened in the past, and of education as a problem of training the individual to react to those situations correctly because of learned reactions which exactly fit the new situation.

3. *Confusing psychologies.* The disputes of psychologists and educators concerning the nature of the learning process are apparent in the various books published at intervals during the past few years bearing such titles as "*The Psychologies of 19—*," etc. It is well to recognize that new knowledge concerning the nature of the learning process should be accumulating through the efforts of research workers in Psychology, Educational Psychology, Biology, and Education. It is doubtful, however, if such conflicts as have occurred do very much toward furnishing the beginning teacher with a working psychology of learning. While it is important that the beginning teacher should understand that knowledge concerning the learning process is changing and that there are schools of psychology which differ to a marked extent in their explanations of the learning process, such knowledge should not lead to confusion and uncertainty. The teacher should master the fundamental principles of learning which seem to her to check with her experience and observation. She should adopt a working

psychology which enables her to evaluate the learning situations which she directs. It is the purpose of the following discussion to suggest the outlines of such a practical understanding of learning.

4. *Two seemingly opposed views of learning.* One of the greatest difficulties confronting both beginning and experienced teachers today is the problem of explaining the apparent conflict between learning as habit formation and conditioning and learning as intelligent adaptation to changing conditions. Education in the elementary school in particular has been greatly concerned with the formation of habits involved in reading, writing, and language in its various forms. Traditionally there has been a failure on the part of teachers to see that the development of skills and habits is not the end-all of education, but merely a means to an end; namely, intelligent and efficient behavior in situations where reading, writing, and language are appropriate forms of reaction. The same fault applies to the learning of other skills and to the learning of facts in history, geography, science, and the like. When skills are thought of irrespective of their use, this conflict between the new education and the old becomes very sharp and there seems to be no way of escape except either to drill interminably on skills and the memorization of subject matter or to abandon this time-honored practice in favor of free and untrammeled activities of various kinds.

5. *An attempt at harmony.* There is, however, no necessity of doing either. When skills are thought of in terms of their significance as forms of activity and when the learning of skills is an outgrowth of purposeful activity of an intelligent type, then practice and drill come forward as ways of perfecting abilities that are highly essential to intelligent purposeful activity. For instance, the boy wishes to

play ball for its own sake but he finds that he cannot hit the ball with any degree of success. This leads to the desire to improve. He finds that he must know more about how to hit the ball and that he must practice hitting the ball, even apart from a regularly organized game as such. If it were necessary, he could learn to bat the ball without indulging in isolated practice; but practice itself becomes a game when motivated by a purpose, and when practice is intelligently directed it results in increased ability which immediately improves enjoyment in playing the game. Practice is thus an integrated activity involved in learning to play the game well. And since it is motivated by purpose, practice becomes much more effective than when purpose is absent and requires less time than if it were engaged in with no realization of the purpose for which it is done.

6. *A new view of learning to read.* Let us apply the principle to learning to read. In the old school the child began to learn to read without any consciousness of a need for reading and with no clear idea of the purposes for which reading might be used. Reading was taught without reference to its use as a means of enlarging experience and as an enjoyable and worthwhile activity in and of itself. Today the situation is different. A need for reading is established and a variety of purposes for reading are developed. Learning to read is thus a purposeful activity motivated by the desire to read and by the stimulus which comes from being in a situation where reading as a mode of procedure is a natural activity.

7. *Habit and skill in the new learning.* This point of view does not deny the need for the establishment of effective habits, skills, and abilities. Skills in performance follow intelligent and effective practice; but skill is not isolated

and is not practiced in and for itself alone. Skills, as in reading, are developed through the practice of reading exercises which are interesting in and of themselves. Little children read to find out how to carry on some activity, learn to color, draw, follow directions, respond to action exercises, read to satisfy their curiosity about things and people, and to collect information which will be useful in solving some difficulty or carrying on some project. Learning becomes purposeful; skills and effective habit reactions are established, not for themselves alone, but for their use in some meaningful larger whole.

8. *Memorization and learning.* In this scheme of things memorizing takes its place as a response to some need rather than as a form of mental discipline. The child memorizes what needs memorizing because it is necessary to memorize in order to participate effectively in the activity of which memorizing is a part and because it is reasonable to do so. Memorizing takes less time because it is purposeful. More time is thus available for interesting forms of constructive thinking and doing which have immediate appeal for the child.

9. *Newer views of learning and drill.* This deference to the needs and interests of children does not imply that anyone can do the work of teaching nor does it imply that all that has been learned about practice and drill, habit and skill shall be cast overboard and that the teacher shall launch out anew on uncharted seas without a compass to guide her in her activities. Such a point of view requires that the teacher shall see education and see it as a whole. It requires that first of all she shall see the child as the one to be educated, inquire into the nature of the child, and seek to understand his modes of learning. It places a large emphasis upon learning as purposeful and intelligent, takes

into account attitudes, interests, and flexible traits as well as habituated and conditioned forms of reaction such as are ordinarily thought of with little regard to their immediate application and use. It forces a change of emphasis and a new idea of the place of reading, arithmetic, writing, and language in the life of children and of adults. Such subjects cannot be most effectively taught when isolated from their use in socialized activities which constitute the chief basis of living and doing. Drill takes its place in the modern school not as the chief business of the school but as a form of activity necessary to the achievement of skill and the formation of certain habits as well as a necessary process in the assimilation of types of data which are known to be essential in carrying on life activities. Drill becomes an intelligent activity, prompted by needs clearly understood rather than a blind, repetitive process that relies chiefly on the law of exercise to establish retention of poorly understood facts and skills.

10. *The newer learning and discipline.* The newer learning does not deny the desirability of the time-honored virtues of self-restraint and adequate conformity with the customs of society. Education, on the other hand, is not conceived of as chiefly a disciplinary process designed to restrain and repress the undesirable traits inherent in original nature. There is a disciplinary function in every situation. Discipline is not a separate factor which is the end-product of a particular educational experience obtainable with a particular subject matter, but rather it is the result of the total experience. It is achieved when the individual learns how to live with other people and it comes from within rather than without. Various subject matters encourage different disciplines. There is no longer a subject matter *sine qua non;* there is no longer a discipline of inherited

authority to be conformed to but rather there is a discipline of life and living together to be achieved. Good conduct is to be achieved through experience just as is any other outcome of education. It cannot be enforced permanently from without; it must be achieved by the learner through understanding and participation.

11. *Learning and preparation.* Learning as preparation for adult life is yielding to learning as a function of present living. The child is best prepared for a useful adult life by living richly as a child. This does not mean that he shall not be brought into contact with the experience of the race but rather that the focus of attention shall not be on what the race has believed to be the most valuable knowledges, skills, habits, or ideals but rather upon present life and means of living it adequately. The child must have experience and repeat experience in order to learn. Certain products of racial experience are adult achievements that have been the development of centuries. To expect the immature child to achieve these same products without adequate experience is a false hope. The child must live here and now. His environment must be controlled but at the same time a sympathetic and experimental attitude must be maintained. He must learn to read, write, and manipulate numbers; he must develop the art of communication; and he must achieve conventional information concerning the world in which he lives. This must not, however, be presented as a dour and unpleasant duty. Life must be studied because it is immediately of interest and because there is pressing need of knowledge; skills must be achieved because of a demand for them in the going concern of life. Rich experience for its own sake must be the central idea in the education of children. Preparation for adult life is only one of the many outcomes of the educational process and that is best obtained by a rich and varied

experience in childhood. Education must begin with the child's environment and with life as it develops around him.

12. *Learning as growth.* Learning is a process that constantly enlarges the child's understanding of his environment, that leads to better and better understanding of life about him, and that encourages freedom of choice and intelligent action. Growth, both in a physical and intellectual sense, is an inevitable accompaniment of life unless the individual be placed in a sterile soil and denied the necessary food that makes growth possible. The richer the food and the more favorable the environment, the better the growth. This is an inviolable law of nature. Learning requires a rich environment, replete with experiences, controlled in character, and selective in nature. The child needs play, constructive manual activities, æsthetic activities, and social activities including the study of social life in all its aspects. By these means he shall grow into a fully developed person. Denied the richness of environment necessary to a full development of these needs, he will inevitably be stunted in some particular or will develop the undesirable attitudes and traits which are the inevitable concomitant of restricted life. Education furnishes the controlled environment for favorable growth.

13. *Learning as adjustment.* Learning involves the adjustment of the individual to the world in various ways. Even in a simple environment, the individual must learn to adjust himself to climate and weather in order to survive. In a complex environment there are many intricate kinds of adjustment necessary. The individual must learn to adjust himself to the changes that take place around him. A few years ago the matter of safety was scarcely heard of; today the automobile, rapidly moving trains, electrical lines of

high voltage, all these physical things in the world, require that the child learn a different set of reactions from those required a half century ago and adjust himself adequately to a dangerous environment. There are also complex social adjustments demanded of the individual today which were unnecessary two or three generations ago. It is the function of the school to teach the child how to meet and adjust himself to these new and complex elements in his environment. He must live in a world of change. And while there is need for the development of independence and initiative in the individual to overcome undesirable conditions and make them better, there is also need for adjustment in the sense of conforming to the laws of nature and other factors in the environment over which the individual has no control.

14. *Learning as organizing experience.* Learning involves experiencing and reëxperiencing, each item modifying one's attitudes, ideals, knowledge, skills, and habits in the light of a new way of looking at things. The animal world changes its habits slowly. Human beings have the ability to profit from experience quickly and to readjust themselves to new situations rapidly. This distinguishes intelligent human beings from the animal world. A horse learns slowly and with some difficulty. What he has learned remains more or less unchanged or changes very slowly. A human being is much better equipped to profit from experiences. The meaning of each experience is important. Practice in analyzing experiences to understand their meanings is therefore a necessary aspect of human learning. New experiences modify older experiences. Common objects take on new meanings with each newly discovered use. Words grow in meaning with each added experience. This means that learning is constantly enlarging the understanding and improving the individual's control of his environment and that

he is constantly reorganizing his knowledge as he gains added experience.

15. *Learning as purposeful activity.* Learning is undoubtedly more rapid and effective when it is purposeful. Individuals rapidly acquire language, skill in manipulation, social understanding, æsthetic appreciation, etc., when these achievements are necessary in order to the realization of some purpose. A child may get along with a sign language or with an almost indistinguishable baby talk in the home environment and be greatly retarded in language development; then, suddenly, placed in school where such means of communication are not tolerated, he makes unbelievable progress in communication of the conventional type because he finds it necessary in his new environment. The lack of purpose in learning that distinguished the formal school made necessary all sorts of coercive measures unrelated to the learning in order to cause children to learn the conventional knowledges and skills. Modern schools try to create situations in which the need for the acquisition of knowledge and skill will be an obvious aspect of the environment. Purposeful learning is always more rapid and more permanent. The more intense the purpose of the individual, the more rapid the learning. This is a law of learning that cannot be disregarded without grave consequences. Unless learning is purposeful, except for those passive kinds of learning that take place as a necessary aspect of living in a world of nature over which there is little control, it is laggard and often of little profit to the learner.

16. *Learning as intelligent and creative activity.* Learning has sometimes been regarded as merely a matter of stimulus and response. Given a nervous mechanism and a stimulus, learning consists of responding to the stimulus in much the same manner as the electric bell responds to the pressure

upon the button which controls it. Stimulus A brings response A after the individual has learned to disregard irrelevant types of responses and select the true response. Thus far it may be intelligent. After that the effective individual is the one who makes the correct response rather than incorrect responses that may be suggested by the situation. This is thought by some to be too mechanistic a view of learning. There is always something new in a learning situation. No two situations are exactly alike. Some intelligent adjustment is necessary even to the opening of a door by a knob, even though many doors have been opened before, because no two doors are exactly alike and no two knobs are in exactly the same place. Learning therefore involves in all cases an intelligent interpretation of the situation and some selectivity in the response. Otherwise the laws of habit formation would largely explain learning. It is this intelligent aspect of human learning that makes creative thought possible. Without this, learning could easily be explained on the basis of set, exercise, and effect. This simple explanation is becoming unsatisfactory to modern thought. The human being has power to vary his response to the demands of the situation; to change these responses at will and thus to create new forms of response as the outgrowth of intelligent thinking and action. Some psychologists feel that the higher animals also have to a limited extent this power. The mechanistic interpretation of learning, which for a time was perhaps in the ascendant, seems in the last few years to be yielding to a view that permits of belief in a mind which bears within itself the power to create new ideas out of old and to modify the situation as well as to be modified by it.

17. *Active and passive learning.* Activity has come to be a word of constant use in the past few years. It has come to mean either mental or physical action that comes in response

to a need felt from within rather than an imposed stimulus from without. Activity is a form of response which seems to enlist the interest of the learner because of his sense of the values which are inherent in it. Active learning is purposeful learning to which the learner lends his aid and approval; passive learning is coercive learning imposed upon the individual by a situation or by other individuals who control the learning situation. It is sometimes claimed that the traditional school encourages passive or coercive learning and frowns on the independent, purposeful, or active type. This certainly was true of schools of two generations ago, but practice is rapidly changing at the present time.

18. *Learning as individual.* Learning is in a sense entirely an individual matter. The mechanism which makes the individual responsive to his environment is indubitably his own individual nervous system with its organs of reception and response. In so far as the individual is modified by the stimuli of his environment, that is an individual affair. Some organisms are more sensitive than others. Each individual must learn of and by his own activity; others can learn for him in only a limited sense. In a larger sense all learning is social, however, for it takes place in response to the environment in which are other individuals as well as physical things. Learning is social because it would be impossible for any learning to take place except as a response of some type to the social environment of the individual.

19. *Learning and the environment.* As has been implied in previous discussion, learning depends for its stimuli upon the environment surrounding the individual. A snail responds to a snail-like environment in an effective manner. All beings, all plants, respond to the environment which surround them. Learning takes place in the animal world and to a more limited extent in the plant world. The human

being is a more adaptable learner and more capable of influence by his environment because he is in possession of more complex and flexible neural mechanism. The effect of the environment is inevitable. Schools endeavor to present the most favorable and effective environment possible. The teacher must constantly seek to enrich and improve it.

20. *True learning.* Gradually, in recent years, thinkers have come to distinguish true learning from false learning. The former is that type of learning which affects the conduct of the individual favorably. False learning, on the other hand, involves those types of learning which leave the individual's conduct unchanged. There is undeniably a great deal of false learning in the traditional school. Examples of true learning are easily drawn from life everywhere. The acquisition of language for the purpose of communication is true learning; but the partial, incomplete, and unused acquisition of a smattering of a foreign language for the sake of obtaining entrance into a chosen college or for the purpose of earning a coveted degree from a higher institution of learning is false learning in the worst sense. True learning takes place when the individual acquires a type of knowledge or a skill in response to a real need, modifies his conduct in accordance with the new learning, and is forever changed; false learning occurs when the individual acquires a language he cannot use or memorizes words that he does not understand. The mechanical response of a parrot is the product of false learning. False learning is profitless learning because it makes no real change in the individual. Few would deny the desirability of a larger emphasis upon true learning in education.

Learning and the techniques and activities of teaching. There are some who seem to have come to the conclusion

that since older views of learning have had to yield to newer views, the principles and techniques of teaching which have been developed in the last century and a half must necessarily all be false, that we may safely dispense with all thoughts of method and technique and that knowledge of these latter is in some way subversive of good teaching. The director of an experimental school was recently heard to say that in selecting his faculty for his school he did not want to employ anyone who had been trained in a teacher's college, normal school, or school of education because such persons were not likely to be progressive in tendency and were apt to be more interested in method than in children. This view is somewhat alarming to serious students of education who cannot believe that all the professional study of education and how to teach is stultifying to those who teach, and that only those who have never given serious thought to the development of a scientific study of education and the art of teaching are especially fitted to undertake the very complex job of developing a new curriculum and new methods of teaching. To accept this view would be to dismiss with a wave of the hand all the serious efforts of two or three generations of hard-working professional students of education who have been responsible in a large measure for the changing views of education and teaching which are now becoming apparent everywhere. It seems to the writers that a saner view is to assume that what is needed, as educational objectives change, is a reworking of the older professional materials and a reinterpretation of education according to modern ideals. Who is better equipped to do this task than those who are acquainted with the development of professional education since the middle ages?

With new views of learning and teaching there are rapidly

developing new techniques of teaching and new ideas concerning the most effective ways of learning. The elaboration of these new views will necessitate a new literature on the subject of teaching methods and techniques. In this and the following chapters of this book the writers have attempted to reëxamine the problem of techniques of teaching in the light of new ideas of learning and to develop a treatment of the professional aspects of teaching which will lead the young teacher better to understand the nature of teaching, the nature of learning and the more important aspects of the technical preparation of the teacher for her job.

The most important change in the teacher's job came about with the modern emphasis upon teaching as direction of learning. All through the following chapters this view is maintained. Expert teaching demands more from the teacher in the way of knowledge and skill than was ever dreamed of in the limited philosophy of three generations ago. A modern school where teacher and children together engage in integrated social activities or the study of social life in a modern environment, where activities, projects, unit studies, and the like go on, demands a far better trained teacher than the set and dried subject school of the past. A new literature of methodology for such schools is developing, rather slowly at present, but undoubtedly it is destined to develop with more rapid acceleration as time goes on.

This book makes no attempt to develop a special interpretation of teaching and learning which can be called by a special name; it is rather the attempt to furnish a simple and readable discussion of the techniques of teaching and learning as they have been modified by the changing views of education which have become generally accepted among progressive thinkers during the past twenty-five years.

Summary. Teaching and learning are the principal activities of what we commonly call education. Each of these activities is complex and requires detailed analysis before it can be understood. In this chapter an attempt has been made to develop an approach to the study of the activities of teaching and learning which emphasizes the fundamental principles that apply to teaching. Teaching is a complex art whereby the experienced members of society provide guidance for the inexperienced and immature members in obtaining an adjustment to the world in which they live. Learning is the activity by which the young are enabled to understand and adjust themselves to the complex world into which they are born. Teaching is entrusted to a group of specially trained workers who devote their entire time to the task. It is organized and proceeds according to certain more or less well-defined principles which change from time to time as theories of life and education change. Teaching is an art, but it is coming more and more to be based upon a developing science of education which furnishes the data and the principles of procedure, and upon a science of psychology which makes a special study of learning and attempts to derive the laws or principles that control the process. Current thinking about teaching tends to set up certain principles of teaching which are briefly set forth in this chapter. Current views of learning are somewhat confused. The older view that learning is chiefly a disciplinary process by which undesirable traits are eliminated, and that the mind is a repository of facts which are stored for future use, is giving way to a newer view of learning. This view holds that learning is an active process in which the individual learner is modified by contact with his environment, that this contact must be intelligent and purposeful, and that the learner must and does learn through reacting to

his environment and through experience with persons, processes, things, ideas, etc., rather than exclusively through contact with words as set forth in books.

This newer idea of learning insists upon the environment being of such a nature that it is meaningful to the child, and upon the use of stimuli to learning which are based upon a real understanding of child nature rather than upon an adult misconception of the nature of children. The new learning makes much of projects, problems, activities, both mental and physical, the development of the art of thinking, and of flexible traits of originality, independence in thinking, and ability to analyze, organize, plan, and carry out activities. Some people misunderstand the import of this view and conclude at once that it is unnecessary to work in order to learn, and that schools should at once abandon lessons, subjects, drill, recitations, examinations, and all of the time-honored activities and techniques. The authors take the view that this is a mistaken interpretation, and that the real contribution of this new view of learning is that it seeks to make learning intelligent and purposeful. Hard work, practice, drill, tests have a new significance and a new meaning. They take their places in the new school as means toward ends rather than ends in themselves. Subjects become useful bodies of material to be used in understanding life. Learning becomes a process of living and doing. Schools become places in which to learn how to live. Contemporary life becomes of great concern. The activities of children are regarded as worth while in and for themselves. Childhood is regarded as a time of life which is crucially significant in the development of the individual. Childhood education no longer involves chiefly a study of things which are adult in character but becomes highly concerned with activities natural to children. Since they

develop a need to read, write, talk, use numbers, spell, and to learn history, geography, science, literature, and the like, they learn them willingly and gladly but with less precision and finish than might be expected of an adult who approaches the same task. Teaching goes on but it is a different kind of teaching; it becomes skilled guidance of learning, based upon a sound idea of the purpose and meaning of learning. Such a changed attitude toward teaching and learning requires a reconsideration of the activities and techniques of both teaching and learning and a restatement of principles. The present chapter has endeavored to develop a restatement of the principles upon which there is a growing agreement among educational thinkers.

STUDY QUESTIONS

1. Discuss teaching and learning as natural and normal activities of life.
2. Show the need for guided learning in the complex environment of modern life.
3. Discuss the meaning of infancy and the special need for organized teaching in a complex civilization.
4. What is the purpose of teaching?
5. By whom is teaching carried on?
6. What is the status of formal teaching and of teachers in contemporary society?
7. Contrast the older views of teaching with the modern view; teaching as preparing children for adult life as contrasted with teaching as guiding the growth of children.
8. What is meant by a "child-centered school"? Read about and describe what goes on in such a school as contrasted with the traditional school.
9. Discuss the statement: "Teaching at present is a skilled occupation rather than a profession for the large majority of those who are called teachers."
10. Discuss the relationship between the science of education and the art of teaching.

11. Why is teaching a particularly important form of social service?

12. Why is high character so important an element in the qualifications of a teacher?

13. Why is a study of teaching so highly important and necessary?

14. What should an adequate study of teaching include?

15. What are the characteristics of good teaching? Discuss each of the characteristics enumerated in this chapter.

16. Why is an understanding of the nature of learning of such vital importance to a teacher?

17. What is the newer view of learning which seems to be gaining acceptance?

18. What two views of learning are seemingly opposed in theory? In what particular phases of learning do these views seem to conflict most sharply? Is there no way of harmonizing these two views?

19. Is it necessary to abandon practice and drill in order to accept the view that children should be given opportunities to live richly in a child-like environment?

20. Show how such traditional tasks as learning to read, write, and use numbers can be given real meaning to the child through the organization of purposeful activities.

21. Discuss learning and discipline; learning and preparation; learning as growth; learning as adjustment; learning as reorganizing experience, and learning as purposeful activity.

22. Show that learning is or should be intelligent and creative.

23. Discuss learning as active and passive.

24. Show that learning is both individual and social.

25. Discuss the effect of the environment on learning.

26. Distinguish between true and false learning.

27. Show why a study of the techniques of teaching and learning is so necessary and important to the teacher.

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PART II

ACTIVITIES AND TECHNIQUES OF TEACHING

Teaching is a complex activity involving knowledge and technique of a high order. It has its peculiar techniques that are not characteristic of other professions. As the teaching act goes on, teachers are found planning, organizing, and preparing for teaching, managing the pupils, presenting ideas to them, assigning lessons, directing study activities, conducting recitations and discussions, drills, reviews, and examinations, and providing for diagnostic and remedial work. Throughout her activities the teacher is explaining, questioning, and directing. As a personality she influences the pupils; as a technician she succeeds or fails in accordance with her grasp of fundamental principles and her skill in the use of necessary techniques. In Part II the principal activities of the teacher are analyzed and discussed in the light of present knowledge of fundamental principles of teaching. While this analysis is related to previous treatments of teaching, an attempt has been made to supplement the older discussions in the light of changing conceptions of teaching.

CHAPTER II

Organization and Management of the Classroom

Introduction. To gain control of the pupils in a classroom and to manage and organize the work and play so that the activity which we call teaching may be profitable to the teacher and pupils alike is one of the first objectives of the beginning teacher. Even the layman knows that organization for work and play is one of the first necessities. Knowing little about teaching in its more complicated aspects, he judges its effectiveness on the basis of what he observes of its more mechanical phases. If the school is well organized and pupils are busy, if no lack of management appears such as is evidenced in the work of the young teacher when she fails to maintain what is called "discipline," he judges that all is well and that she is a good teacher. Principals, supervisors, and superintendents are generally concerned first of all with the ability of a teacher in organization and management, for they realize that without them the school is quickly subject to criticism by parents and public in general; they know that good teaching cannot go on when children are unguided and uncontrolled, and that one of the first qualifications for teaching is the ability to manage and control the classroom in a manner similar to that in which good society is guided and controlled by custom and law. One of the first considerations of the beginning teacher is, then, to learn what is known about economical and effective management.

Definition of management. Management is the art of organizing the classroom so that work and play go forward

without unnecessary loss of time and energy due to poor arrangement of equipment, poor manipulation of materials, and the failure of pupils to be coöperative in whatever type of activity may be undertaken for the welfare of the group. The management of the classroom includes the use and care of floor space, light, heat, and ventilation, the arrangement of seats, desks, cupboards, book cases and other furniture, the care and use of books, paper, pencils, blackboard, crayons, maps, globes, and other apparatus, and the adoption and administration of a plan for the management of the pupils as a group of beings associated together for the common welfare. It is apparent, then, that management might be discussed as having to do mainly with equipment, materials of instruction, the physical plant, and the personnel. The most important of these four types of management is that which is concerned with the personnel. Many teachers fail in the latter who are fair or good in the former. At the bottom of success in personnel management is a thorough understanding of children and sound training in the organization of classroom activities so that each child finds satisfaction in attendance. Management of the physical plant, of equipment, and of materials helps in making a good school. A teacher, however, may be an excellent housekeeper and manager of material things and still fall short of being a good teacher because of his failure to understand and manage children effectively.

Management and waste. Classroom management is, in its control of the physical plant and the materials of instruction and the management of routine affairs, comparable to management in business. In a well-conducted store, light, heat, and ventilation are carefully attended to, goods are arranged in an attractive fashion and in a manner calculated to promote efficiency in handling and replacement, the

clerks and other helpers are subject to supervision and required to be neat, orderly, and courteous, and accounts are carefully kept of the receipts, the expenditures, and the profits which should arise from a well-managed business. In a like manner, the school must make effective use of the plant, the equipment, and the time of its members in order that a profit may accrue to the community in terms of better boys and girls, who are learning constantly to manage themselves better, and who are engaged in the development of the powers and capacities inherent in them. A teacher who is a careless and slovenly manager of the school as a business is adding to the cost of public education and is not a profitable employee. Care must be taken to prevent waste of both human and other materials, to conserve time, and to increase the benefit of education to the community in so far as possible through management.

Coöperation is necessary. The management of a school is no better than the management of the sum total of the individual classes of which it is composed. The teacher's duty to his principal requires that he conform to general directions concerning such matters as opening time, dismissal, recess periods, passing through halls, conduct on playgrounds, in gymnasium and auditorium, and on the street, and other practices necessary to keep a school free from distracting influences. Children from a disorderly classroom spread their influence in the halls and on the playground. It is therefore the duty of the teacher to teach his pupils to observe such general rules as are necessary to obtain proper coördination among all those personalities who compose the school.

Formal and informal methods. Informal methods are thought to be better for the individual than the highly formal and militaristic methods of the past; the small school can

make use of methods which may be less formal than those in large schools where masses of children must be moved from place to place. The presence or absence of marching and counter-marching is not, however, the mark of either a good or a poor school. Good management rests upon the development among the pupils of a coöperative spirit and a knowledge of how to live together profitably. There are all types of orderly and disorderly schools. Generally speaking, the school is orderly when pupils are kindly, courteous, co-operative, and sincerely interested in the common welfare. A good method of having a good school is to enlist the interest of children in the management of the school and to train them to have a share in it.

Larger aspects of management. Nevertheless, control of the classroom from the standpoint of good conduct, orderliness in passing, courtesy, and the like, is only the mechanical aspect of management. Management extends into control of the curriculum, the methods employed, and the effective use of the pupils' time in school and out. Control of the classroom in its mechanical aspects is a condition necessary to the more important matter of guiding the learning of the pupils in effective ways. Control cannot be separated from the whole complex problem of educating the child. And the type of control used depends upon the philosophy underlying the education of children. Militaristic methods mean, generally speaking, an authoritarian type of philosophy and a lack of sympathy with children. Democratic methods mean a belief in the essential goodness of children and the efficacy of learning through living together in a democracy to become good members of an adult world. The best type of control is that based upon learning, through participation in a democracy of childhood, how to conduct oneself effectively in a social environment in which

an individual gains as much freedom as he shows himself capable of assimilating.

The teacher's equipment for management. The success which the teacher has in classroom management depends upon certain factors, among which are personality, preparation for teaching, the type of school which is to be taught, the type of community, the curriculum, the general method of instruction, the types of examinations given, and the teacher's attitude toward and sympathy with the various outside activities of children. Power to organize routine matters is, of course, also involved. The personality of the teacher must be pleasant, his knowledge of his subject must be good, the school must be physically clean, healthful, and manageable, the community should be orderly and favorable to teaching, the curriculum must be attractive, the general method of instruction must be in agreement with the laws of learning, examinations must be just and fair, and the teacher must show sympathy for the various interests of children if he is to succeed in having the highest type of management. Any one or any combination of these factors being unfavorable, the problem of management is increased in difficulty.

A knowledge of children based upon experience and upon acquaintance with the psychology of childhood and adolescence is necessary for sympathetic understanding of children and successful management of them. The teacher who dislikes children and does not understand them, even though his dislike may be secret or unconscious, will have difficulty in obtaining the confidence and loyalty which are so necessary to successful management. Children may outwardly conform to the regulations of the school and obey under compulsion without learning the lesson which should be obtained from experience with good management. Secret resentment

of authority and a tendency to become unrestrained in personal conduct when out from under authority, may follow attendance in a school which is ruled by an iron but unsympathetic hand. Understanding and sympathy for children make management a far more interesting and more human task.

Management of routine affairs. Routine affairs in the school are important in management. Mechanical things that can be reduced to a routine should be quickly singled out and managed in that way. Passing, distribution of supplies and papers, etc., should be organized so that a minimum of time and energy is required in their administration. Children should be enlisted as helpers in the management of the school and as many tasks delegated to them as possible. Committees may be used for the management of such things as control of heat, light, and ventilation. Individual pupils may be made responsible for the care of flowers, apparatus, passing and collecting of materials, for direction of passing traffic, etc., in a manner beneficial both to them and to the school. It is a mistake for a teacher to neglect to think out good ways of managing routine affairs and to neglect to engage children in coöperative management.

Management as a means to an end. As has been implied in the preceding discussion, the function of classroom management is to set the stage for effective teaching and learning as well as to give pupils experience in managing a coöperative group enterprise. To think of good management as an end in itself is to have a very narrow view. It is necessary to regard management as chiefly concerned with improvements in the social adjustments necessary to living in a democracy. In the classroom the child will get many of his ideas concerning proper conduct toward his fellow beings.

If he is controlled by a teacher in a strictly militaristic fashion, he may learn to conform to the routine under compulsion without ever learning the lesson of coöperative living. What he needs to meet here is a normal human situation in which he is a coöperative agent. He must learn to assume responsibilities, to realize that he is a social being and that he must learn to control his own individual desires in the interests of the welfare of the group as a whole. He must develop good ideals of conduct. He must learn that good order, cleanliness, good health, courtesy, kindness, unselfishness, and the preservation of an atmosphere of worth-while work and play are priceless in themselves and that they further his interests in every way. He will learn these lessons best if he is made responsible for a share in the management of the classroom just as every child in a good home has a share in the management of the life of the home. He must have free social intercourse with his fellow students under sympathetic guidance from the teacher. Restraint is placed upon him only in those matters where his individual desires may conflict with the welfare of the group as a whole.

Children's attitudes and good management. Attitudes toward work and habits of work and play will be developed by effective classroom management. If the teacher conducts the affairs of the classroom in an orderly and effective fashion, the pupils will soon come to have the attitude that orderly methods are best and will desire to have the work of the class proceed in a systematic and effective fashion. The habits of beginning work promptly, of getting materials in order, and of persevering in work until it is finished will be developed if the teacher sets up a situation in which things are done in this way. The habits which have to do with the routine affairs of the school will also be developed so that the pupils will enjoy and favor economy in matters of this

kind, if good management is the ideal of the teacher. Conversely, careless, slip-shod management will soon lead to disorder and to a lack of faith in the teacher among at least the more intelligent of the pupils.

Classroom management and disorder. It is the function of the teacher to establish a situation in which good order is the common thing. Disorder is the sign of something fundamentally wrong. Many teachers in their attempts to be friendly with children disregard the pranks of mischievous children and hope to get along with them in that way. This is a sure means of laying up trouble for oneself. The beginning teacher will do well to note all signs of disorder when they first appear, to single out those who are responsible, to make known his disapproval, and forever after to persist in trying to remove the cause. A common cause of disorder, however, lies in the fact that the teacher does not succeed in keeping the pupils busy with well-planned activities and that in the absence of direction of a worth-while type, the children introduce discordant elements. Classroom management can never be merely a matter of keeping order and nothing more. Doing things in a systematic and effective manner merely for the sake of organization itself is beyond the interest of most children. The things themselves must be worth doing for their own sake.

1. *Management builds up morale.* Building up the morale of children is a part of classroom management. Some children have very low ideals of conduct; some lack self-confidence and initiative in conducting their own affairs. The work of the classroom may be so managed that the pupils who are boisterous and selfish may learn to be unselfish and coöperative, the timid may learn to develop courage, and all may learn the lesson of coöperative living. The morale of a class is that intangible but very real thing

which we call the class spirit. A good morale means that the pupils are coöperative, courteous, and genuinely interested in their activities. This spirit is present in well-managed classes and absent in those poorly managed.

2. *Management eliminates waste.* Efficient management eliminates waste. Waste of time, materials, and human effort is possible in the classroom. It is little short of criminal to force children to go to school and then so to manage their affairs that they fail to make progress in the development of high ideals, right attitudes, worthy interests, and effective habits and skills. The ideal of good management should be that every class period is effectively and economically managed so that no time is lost in attending to physical conditions, in the passing of supplies and materials, and in adjusting the individuals of the class quickly to the task in hand in order that the objectives which are present may be reached without loss.

3. *Management relieves strain.* Efficient management relieves the strain of teaching. A teacher who is constantly concerned with the details of management, who is never certain of the orderly conduct of her pupils, faces one of the most nerve-wearing and difficult tasks in the world. Young teachers are often quite miserable while they are learning the lesson of management. It is well, then, to attempt to learn all that one can about good methods of management before entering upon teaching in order to avoid unnecessary wear and tear.

Changes in theory of classroom management. Classroom management has changed to a marked extent in the last two decades. When teachers were less well trained in teaching and in their subjects, they were much concerned with management and tried to make up with good management for what they lacked in other ways. Ingenious schemes

were developed. Many rules were formulated and much was written on how to get order and to keep it. Changes in the curriculum and the methods of public education and in knowledge concerning the nature of children and their methods of learning have had marked effect upon management. *The Hoosier Schoolmaster* reflects the ideals of a generation for which one of the chief sports was the baiting of a young or weak teacher by the bullies of a neighborhood. In those days "order" was maintained by sheer physical force or by the more important fearless spirit which by some magic of the eye and voice enabled teachers to "control" those who were often physically stronger than themselves. The majesty of the law also was long invoked as a means of keeping children at least outwardly acquiescent to the authority that belonged to the teacher, due to the fact that she or he stood *in loco parentis* and represented the almost complete authority over children which lay in the father of the family. That the method of authority was often a failure many adults of middle age today can testify.

Management and the total situation. Today there is a marked change. The tendency is to regard management as a problem of education as a whole. Management must not be wholly enforced from without the child, but must rather start from within. The school is regarded as a democracy in which children learn how to live through living and the problem is one as broad as education itself. Greater attention to children's interests, changes in the curriculum, and the tendency to set up problems and projects and to organize activities rather than merely to assign and hear lessons from books has made the problem of management much more complex but, at the same time somewhat easier than it used to be. There is a marked tendency to let pupils manage the schools themselves and to appeal to authority

only when there is no other recourse rather than to make authority the paramount thing in the management of schools. Thus it may be said that there are two basic types of management to be found in the schools: (1) the older or militaristic type which was inherited from the past; and (2) the modern or democratic type, which is based upon the theory that pupils learn how to manage themselves through cooperative effort directed by the teacher.

Democratic management. Democratic management rests upon the idea that pupils will thrive best when they have a part in the management and learn to become responsible for it. It is more friendly and more in keeping with our democratic theory of life. Democratic management may, however, be good or bad. A teacher who fails to understand children may give them too much freedom before they are able to use it. She may turn the school over to children who are still unable to manage themselves in any particular and thus fail to exert the direction and guidance that are essential with immature human beings while they are learning to manage themselves. Children should have as much freedom as they can assimilate at any one time. If they can organize their activities in such a way that a minimum of teacher-control is necessary, so much the better. But control of their affairs must be given to them only as they are able to profit by such control. Some rules will have to be made. Some restraint will have to be exercised and some customs which are found good for people in groups to observe will have to be established. The important thing is that the teacher shall gradually put more and more trust in the children and that they shall have more and more to do with the management of their affairs.

Techniques of classroom management. Certain effective practices in the management of the routine affairs of

the school make possible effective teaching. These practices may be designated as techniques of classroom management. They have to do with the routine affairs and with matters that occur again and again, which should require little change but be reduced as soon as possible to the habit level in order to leave the minds of the teacher and the pupils free for more important matters. Let us assume that the teacher is going to a new school and must prepare to teach effectively from the first day. What shall she attend to as routine matters?

1. *Getting acquainted with the classroom.* First of all the teacher should become thoroughly acquainted with her classroom and find out where things are. She should visit the school before the opening session and find out what she has to work with. She will do well to examine the building to find the location of toilet facilities, the means of access to the building, the location of playgrounds, auditorium, library, cafeteria or lunch room, etc. Then she should visit her room and examine it critically, learn about the heating and ventilating system, examine the lighting, see whether or not the curtains will work, and see that books, maps, and charts are available and arranged for most effective use. She should then plan to make the room as attractive as possible by adding any decorative touches that she may desire to make it seem homelike. She should see that paper, pencils, ink, chalk, erasers, etc., are available and ready for use. It goes without saying that she should then plan the work for the first day carefully in order that things may start off effectively and that she may create a good impression on her pupils.

2. *Seating the pupils effectively.* Great changes have taken place in classroom seating in the last few years. The long rows of seats of the traditional school are being replaced in

many schools by a less formal method or arrangement. In the primary grades an effort is being made to deformalize seating by the use of long tables and chairs, or by smaller tables at which groups of five or six pupils may be seated. Whatever system of seating may be present, it is well for the teacher to attempt to ascertain something about her pupils and to seat them so that the children who have poor eyesight or hearing may be near the front of the room and those who are likely to be troublesome may be nearer to her and more easily managed. The first day pupils may be allowed to choose their own seats and then as the teacher learns more about them, she may change the seating until she finds a good combination. There is some reason to believe that children who are seated near the front or the windows of an ordinary classroom have an advantage in certain types of work over those on the dark side and to the rear. Changing of the seats at intervals may be a desirable and advantageous thing, but a fixed seating arrangement soon becomes habitual to children and when properly taken care of, makes one less problem to think about and thus leaves time for other things.

It will be advantageous for a teacher who must handle a large number of children to make a chart of her room for each class and to write the pupil's name in each square representing a seat. She can thus familiarize herself sooner with the pupils' names.

Grouping children into ability groups, or into several small study groups, as is practiced in some schools, makes it necessary to study carefully the most advantageous placement of such groups in the classroom. The necessity of fitting children with seats and desks somewhat closely adapted to their physical size also complicates the matter of seating. It will require care and thought on the teacher's part to adjust all these matters satisfactorily.

3. *Moving about.* If classes were composed of a few pupils and schools were small, there would be little difficulty with the passing of children in and out of school. In large schools, however, there must be a plan for passing to and from classes and in and out of the building. Formerly children were marched in military formation in most schools. There is a tendency today to try to get children in and out of the building without this marching procedure. In the classroom itself some systematic way of having children get ready to go home and out for intermissions will avoid confusion. In many schools a system of marching is required. Some teachers have the class get wraps by rows and then line up for dismissal; some dismiss pupils informally insisting only that they shall act like a group of well-behaved adults in getting in and out of the building. The latter is undoubtedly more in keeping with the practices of adults and if possible should be favored. Unnecessary formality in matters of this kind often creates disciplinary problems which could be avoided. On the other hand, if the informal method is tried and found to be wanting, there can be little objection to asking children to walk out quietly in lines; but a military goose-step is hardly in keeping with the spirit of democracy.

4. *Passing books and supplies.* In the interest of economy of time it is well to have the passing of books and supplies planned so that it takes little time from the more important business of learning and teaching. Pupils may be appointed for groups in rotation for this responsibility so that all pupils have a share in it. The monitorial system of management has received the additional endorsement that it is also democratic. Pupils enjoy the activity of helping and get training from it. The teacher can waste a good deal of time if she attempts personally to do all such things for herself or

if she lets each child help himself. In the latter case confusion can hardly be avoided.

5. *Taking care of physical conditions.* Regulating the light, heat, and ventilation, keeping the blackboards clear, and even picking up paper and other material which may give the classroom an air of disorder may be managed by the appointment of committees, by monitors, or informally, as may be desired. The writers favor making the children responsible in so far as possible for light, heat, and ventilation and for other matters of this kind. It may cause trouble, however, to ask children to wash the blackboards and clean erasers and pick up refuse unless the community is one in which the parents are servantless and expect children to do these things. There is a valuable training, however, in having children take care of matters of this kind and the teacher should by no means be regarded simply as an upper servant and be expected to do all these things unassisted.

6. *Keeping order.* The important matter of keeping order, that is of preventing pupils from doing things which distract others who are at work, can hardly be turned over to children *in toto*. The teacher will be held responsible by the principal and the parents and must contrive to manage so that little disorder will appear. It is hardly possible, however, that a teacher will not meet, early in her career, some few children who will be anti-social and will not respond to good incentives. Such children must be controlled by whatever methods are workable. Common devices are isolation of the pupils from the group activity, reprimand, or more severe punishment. In the meantime, the teacher must seek for the cause of disorder and work with the individual to attempt to remove as quickly as possible the undesirable tendency. Sometimes children can be used effectively as a group to discourage the non-social one and make him more amenable

to group customs. In the middle grades and above they can be led to set up certain standards of their own for their conduct in school and to develop a group responsibility for good conduct. Unfortunately, however, tradition is so strong in this country that the teacher is a sort of police officer, that many parents aid and abet children in disorderly conduct by reciting their adventures as youths in getting the best of a weak or disliked teacher. In the last analysis, the teacher is responsible for setting up high ideals of schoolroom conduct and for seeing that order is maintained. It is better to substitute group action for authority; but if authority is challenged it must be maintained. A good practice is to make rules concerning conduct only when necessary and when such rules are made to see that they are scrupulously observed without fear or favor to any child. Having mechanical details as much as possible reduced to a routine aids in preventing disorder and setting up by group action certain standards of conduct in general takes care of those situations which are not specifically taken care of by routine procedure. Such a set of standards might be somewhat as follows:

1. Children with good manners speak in low voices and laugh in moderation.
2. When a group of children are busy on a common task, it is not good sportsmanship for any member of the group to do things which detract from the main business of the group.
3. Quiet is necessary when pupils are studying. It is not the part of a good citizen to interrupt this necessary quiet.
4. In a group discussion it is necessary to have a leader. Members of the group should not address the group until they have the permission of the leader, unless it is an informal, friendly discussion.
5. In passing about the room a child with good manners goes as quietly as possible.
6. Sharpening of pencils and obtaining of materials should be taken care of when it will not disturb others.

7. Good manners demand that the teacher be addressed as "Miss ———" and that other members of the group be addressed by their proper names. Such expressions as "Please," "Thank you," "Pardon me," and the like are often heard among well-trained children.

If such a set of standards can be worked out by the pupils, it will help much in developing a good classroom spirit and in the maintenance of good order; but, of course, good order cannot be maintained when children are not kept profitably occupied.

Good order is favorably affected by having mechanical things reduced to a routine, organizing activities effectively, having the classroom and everything about it in good order, enlisting children's interest in good order, making each activity interesting and effective, attending to individual differences so that each child may taste a measure of success, good preparation on the part of the teacher, the maintenance of a pleasant manner by the teacher, organizing the study periods effectively, keeping the classroom properly heated, lighted, and ventilated, and by a change of work when mental fatigue has set in. A carefully prepared daily program of activities also helps in the preserving of good order and an industrious and happy classroom spirit.

Classroom management and discipline. Discipline was once much more prominent in educational discussions than at present. The theory of formal discipline which dominated educational philosophy for a time was that it did not matter what pupils wanted; their part was to submit to the will of adults gracefully. Education was a process of overcoming in the individual the tendency to disorder and to undesirable traits of various kinds. Today discipline is not approached directly as a major concern of education. That does not mean that teachers are any less interested in having children

develop good habits and conduct themselves in a proper fashion but rather that the theory of discipline has changed. Discipline for the individual comes largely from within rather than from without. There is discipline in group living. Each subject and each activity carries with it its own discipline and the child learns how to conduct himself favorably through a succession of experiences. In the narrower sense the term "discipline" refers to the handling of cases of disorder, bad manners, and more serious character defects which make their appearance among children now and then even in the best of schools. If all pupils came from good homes and had good home training, there would probably be little occasion to speak of discipline. The pre-school period is most important in the developing of good character traits. The same kind of conduct that causes a baby to be a nuisance to its parents and associates causes a child in school to revolt against school customs and become a problem to the teacher. Good conduct is a community and home problem as well as a school problem. The teacher needs to study the community and home life of her pupils in order to know how to handle cases of discipline.

The problem cases. Even in the best regulated of schools there are children who cause the teacher difficulty. Some of the common types of disorder are whispering, laughing at inappropriate times, clowning in order to draw attention, practical joking, discourteous language, and more serious character deficiencies such as dishonesty, sex aberrations, malicious destroying of property, etc. It must be recognized that the manner in which a child conducts himself is the product of his environment. Children are disorderly, discourteous, and the like for specific reasons that originate in their past experience. Some children are disorderly because they crave notice; some are ill-tempered,

selfish, dishonest, and delinquent morally. Whatever the cause, the teacher must seek for it and attempt to get at the basic character defects. Some children admire a person of authority and certainty; some are awed by a determined spirit. The teacher can depend in general, however, on the fundamental goodness of most children and have confidence that if she is fundamentally kind, honest, industrious, and desirous of guiding children in profitable experiences she will have little trouble with disciplinary cases. Temporarily, while children are seeking to understand her, she must give the impression of firmness and certainty in her conduct and must even use force, if necessary, to cause children to conform to standards of good conduct; but to depend upon force alone is a serious mistake. The force of the total situation must ultimately control the conduct of the children in the group. A teacher who is weak in character herself can scarcely hope to become a good leader of children.

Forethought and prevention of difficulties. Good management prevents disciplinary problems from arising. The well-ordered school demands good order from its inmates. Conversely, bad order leads to bad conduct. The teacher who has her work poorly organized, who lets each day's problems settle themselves as they arise, and who refuses to spend time in thinking and planning is bound to have trouble with the discipline of her school. The remedy is for her to make a settled routine of mechanical things, to have a definite program of activities, to enlist children's help in management and to aid them to learn how to manage themselves profitably. Some children who are potentially disorderly may be enlisted as aides in management; committee memberships, monitorships, reports, discussions, and dramatic and other extra-curricular activities may be used to

train children in good management of their own affairs. Children will respond to the incentives of leadership, approval of the group, approval of the teacher, and success in projects and activities. Negative incentives such as scolding, corporal punishment, isolation, suspension, expulsion, etc., are now being more and more rarely used. The dunce-cap, the ferule, standing in the corner, sending the child to "the office" and such devices are seldom used in a modern school. The teacher looks to the activities, the method, and the group morale as the important sources of control of individual conduct.

When management fails, the teacher must look to the fundamental organization of her teaching activities in order to find the secret of the difficulty or to the fundamental character defects of her pupils as well as to her own character traits, her attitudes, and her methods of teaching.

Penalties for misconduct. Penalties as a remedy for bad conduct when used should be natural results of the misconduct. If a child cannot take part in group activities without disorder, he may be isolated from them until he is willing to take part effectively. If a child is discourteous, he may not be allowed to talk until he is willing to be courteous. Corporal punishment and even slighter forms of physical contact with children should be avoided until it is determined that the given child knows no other authority and will respond to no other incentive. In many schools this method of primitive days is rightly prohibited. Under most circumstances it is only the last resort and very doubtful as means of procuring a real reform in the attitude of the culprit. It is, of course, true that some few children are of such poor intelligence that it is of little value to appeal to reason with them. In such cases restrictive measures are necessary.

Standards of good management. What is a well-conducted school and what is good management? How may a teacher know when her class is well managed and when it is not? There is at the present time no objective way of measuring good conduct. It is possible, however, to set up certain standards for the use of the teacher so that she may measure the effects of her efforts to conduct a well-managed school. The writers will attempt to do this by means of a set of principles of good management.

Standards of Good Management

In a well-managed classroom the following conditions exist:

1. There is a well-organized program of activities.
2. The arrangement of the classroom is attractive and orderly. Supplies are well arranged and easily obtained.
3. There is a well-organized plan for passing of books and supplies.
4. There is a definite plan for taking care of light, heat, and ventilation. Pupils have a part in this activity.
5. There is a definite set of standards of conduct to which the pupils give their support.
6. Children have good manners and speak in low, courteous voices except when engaged in natural play where shouting and laughter are appropriate.
7. The teacher is as courteous in voice and manner as any well-bred person should be in his own home.
8. There is a spirit of coöperation between teacher and pupils. Pupils volunteer to help each other and the teacher.
9. There is good housekeeping; the room is always orderly and is as attractive as possible due to the good taste of teacher and pupils.
10. Problems of disorderly conduct seldom appear. When they do they are handled as offenses against the group welfare and not against the teacher personally.
11. Positive incentives to good conduct are used; negative incentives are conspicuous by their absence.
12. Pupils are happy and industrious; there is a spirit of group loyalty and of well-being.

Check-lists to determine whether or not good management may be present in any given classroom are available in *Directed Study and Observation of Teaching,* Unit 2., *Educational Outcomes.*

Results of good management. The outcomes of good management are to be sought in the possession of desirable character traits among the children who have been members of the class. These consist of good attitudes toward the teacher, the school, fellow students, the curriculum, and the activities. Permanent interests in school activities should result from good management. Evidences of enjoyment should be obvious. Likewise, the possession of good habits and skills should follow good management. Children should have habits of coöperation, industry, loyalty to group, the use of books, the habit of study, and good personal habits. Certain skills and abilities should also arise from good management; ability to take part in group discussions, to respect the rights of others, to do one's share in a coöperative enterprise, to take care of light, heat, and ventilation, to organize activities, to find materials, to arrange, classify, and preserve materials, to use the library, the dictionary and other aids to knowledge, to take part in an argument amicably, and to observe the customs followed in a polite society. Negatively, children should have learned to control their tempers and to avoid dishonesty and discourtesy in their dealings with their fellow students.

Summary. While management in routine affairs is the subject of main consideration in the present chapter, it is obvious that good management is something that is deeper than merely attending to housekeeping and other routine affairs. Through management the teacher is attempting to develop good character traits among children by so conducting her class that they learn lessons of orderliness,

coöperation, loyalty, courtesy, and the like. Control of childrens' conduct should first be sought through positive incentives. Negative incentives should be rarely used. A well-managed class develops certain important character traits which are among the most important outcomes of the educational process.

STUDY QUESTIONS

1. In what ways has the theory of classroom management changed in the last two decades?
2. Define classroom management.
3. What is routine management?
4. What is business management?
5. What is personnel management?
6. Which type of management is most difficult?
7. What factors make for success or failure in management?
8. What is the fundamental function of management in the modern school?
9. What part should children have in management?
10. What two contrasting types of management are treated in this chapter?
11. Discuss the theory of democratic management.
12. What are techniques of management? Discuss techniques to be used in managing routine affairs of the class.
13. What changes have taken place in the theory of classroom discipline in recent years?
14. How may the teacher judge the effects of her management?
15. Name some of the most important educational outcomes of good management.

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CHAPTER III

Lesson Planning

Introduction. The art of lesson planning has been undergoing many changes in the past few years. Instead of the time-honored daily lesson plan, many teachers have been experimenting with longer unit plans, course outlines, and the like. Even though planning has changed in many respects, there has been no lessening of the importance of effective lesson planning in good teaching. Routine management is important and indispensable. In lesson planning, however, the teacher comes into her own as a director of learning activities. All that she knows about her material and all that she knows about children must be used in the planning of lessons of whatever type they may be.

Prerequisites of lesson planning. Knowledge of subject matter, children, and method and understanding of the aims and purposes of education determine how well a teacher may write her lesson plans.

Adequate training in subject matter as a part of her preliminary training is obviously essential as a prerequisite of lesson planning. No teacher can map out a proposed unit or write even a single daily plan without knowing thoroughly the field in which she is working. Even though in the elementary school the use of subject matter may be limited, it is not safe to assume that the training of the teacher in history, English, arithmetic, elementary science, geography, etc., should likewise be limited. Because of greater specialization, the high school teacher must go more deeply into her subject or subjects, but the elemen-

tary teacher needs likewise a broad general training and special training in the teaching of skills—reading, writing, spelling, composition, art, music, and physical training. Her training can scarcely be adequate short of a four-year college or university course.

Knowledge of children gained from direct contact with them and from a study of child psychology is correlative in importance with a knowledge of her subject in planning lessons. She must not only know the facts of history but she must know what history will be assimilable by her pupils and how to organize her materials in a psychological rather than merely a logical fashion. She must understand children's traits and interests in order to know how to plan for them.

Understanding of method is a third essential prerequisite. If the teacher thinks of method as something apart from subject matter and from children's ways of learning, she may make the mistake of trying to use a method too mature for the children or foreign to their ways of thinking and acting. Knowledge of method necessitates a thorough grounding in the psychology of learning, as well as a sound philosophy of education and a grounding in sociology and educational biology. With this background the teacher will not become a mere worshipper of devices.

A fundamentally sound point of view with respect to the aims of education especially as modified by educational science, philosophy, and biology must be a prerequisite for good lesson planning. Otherwise, the teacher will slip back into the practices by which she was taught and no progress will be made in improving teaching and learning.

The necessity of lesson planning. Some kind of lesson planning must be carried on by all teachers whether novices or master teachers, for lesson planning has certain definite

functions to perform which are indispensable in good teaching. Lesson planning forces consideration of goals and objectives, of the selection of subject matter, the selection of a type of procedure, the planning of activities, and the preparations of tests of progress. Lesson planning involves looking ahead and planning a series of activities which all progress definitely toward the modification of children's attitudes, habits, informations, and abilities in desirable directions. Without this kind of planning, except by a miracle, there can be no steady progress and no definite outcome of teaching and learning procedures. Even in the freest type of school in which children's interests and tastes are followed more closely than in the traditional school, planning is an essential activity for the effective teacher. The form of the plan may change according to the educational purpose of the planner, but the need for planning remains. Planning prevents waste. It helps the teacher to be systematic and orderly. It encourages good organization of subject matter and activities. It prevents haphazard teaching and goes a long way toward eliminating disorder and other ills of thoughtless teaching.

Good planning helps the teacher to delimit the field in which she is teaching. She decides what to deal with and how to deal with it ahead of time and is not thus subject to exigencies of the moment. It encourages a proper consideration of the learning process because in planning the teacher will give more consideration to well-planned procedures. It also encourages continuity in the teaching process. Needless repetition is avoided, and proper connections between different lessons or units of study are provided for ahead of time.

It may be said, however, that planning may have its evil side. If plans are made by others than the teacher and

are simply delivered to her to be taught without any choice on her own part as to how they are to be administered, the teacher will fail to grow and her powers of initiative and independence may be harmed. Slavish following of a predetermined plan may also cause a teacher at times to fail to take advantage of an unexpected opportunity to develop an interest which otherwise may be lost. Some of the very best teaching may occur when the teacher follows her own nose and develops some activity which she discovers to be ripe for development at that particular instant. It is well to recognize that as teachers grow in experience and efficiency they should also grow in freedom to adjust their plans to the demands of the developing teaching situation.

Forms and types of plans. In the modern school lesson plans may be of various types. The common ones may be enumerated as follows:

1. The short daily plan in a commercial ready-made plan book.
2. Longer daily plans, loose-leaf or in a teacher's private plan book.
3. Term syllabi or outlines, mimeographed or printed.
4. Unit plans, long or short, which treat a large division of a subject or outline a complete activity.
5. Detailed study guides which outline all the activities of a unit in such a manner that it serves as a plan for both teacher and pupils.
6. Mimeographed exercises or daily units which are prepared by the teacher as she proceeds in her teaching.
7. Workbooks—detailed exercises, outlines, etc., which are printed by publishing houses for use by pupils and teachers, and furnish material to accompany the textbook.
8. Hasty outlines or notes jotted down for the moment and changed each time the teacher teaches a lesson.

Each of these types will be taken up and discussed in order.

1. *The ready-made plan book.* Many superintendents require their teachers to keep a ready-made plan book. These books are furnished by the school district and consist of forms made up of ruled squares, one for each subject and each day of the week. In this plan book the teacher is required to enter a brief description of the work to be done in each subject for each day of the week, a week in advance. Such a record is believed by some administrators to be a necessary administrative device to encourage systematic planning and also to serve as a record of work to be done in case the teacher is ill and a substitute is required. Many teachers resent having to make even such a brief outline of their work in advance. They assume that their training in teachers college or school of education has been sufficient and that they should be able to teach without planning. The experienced, earnest teacher, however, knows that planning is necessary, and she will ordinarily make her own plans even though not required to do so. The ready-made plan book represents the very minimum of systematic planning. Most teachers make more comprehensive plans.

2. *The longer daily plan.* Many teachers write out plans for important lessons comparable to those which are prepared in training schools for practice teaching. Such plans usually cover the following major points:

a. Aim
b. Materials
c. Procedure
d. Test of progress

Sometimes the plans are made with a two-column arrangement; on one side the subject matter is outlined and on the other the procedures, including suggestive questions, are indicated. Examples of these plans may be found in the

books cited at the end of this chapter. There is undoubtedly a valuable training in self-discipline that comes from writing such plans. The writer of such plans will seldom teach in a haphazard fashion. Practically, however, it seems hardly possible to write such a detailed plan for every lesson the teacher is to teach and probably this is unnecessary. In her training period, however, the teacher should undoubtedly have much training in the writing of such plans. The teacher of a single subject or two should develop a series of plans for the major portions of her work and teach them until she is a thorough master of systematic procedure.

3. *Term outlines.* The term outline for the work of a single subject has been growing in popularity as a means of obtaining systematic progress in the study of a subject. Such outlines may take on many forms, from a simple logical outline of the subject to a series of carefully worked out lessons with the procedures indicated so that a teacher is never at loss as to what to do next. To proceed by such an outline is undoubtedly better than simply to use a textbook and make hit or miss assignments day by day. When the outline is planned for teaching as well as to indicate the limits of the subject, it becomes a useful teaching instrument and leads to a high type of teaching. The working out of such long outlines takes time. Many teachers carry away from their period of training outlines of this type which they use continuously in their teaching. The most serious objection to such plans is that often they are unmodified and do not take into account the present interests and needs of the pupils.

4. *The unit plan.* The unit plan takes its name from the fact that it is a teaching outline of a meaningful unit of subject matter or a learning activity of the project type. It may become a study guide for the use of children, if made

for that purpose, or it may remain in the hands of the teacher to serve as his personal record of proposed activity. A series of such units will constitute a term, semester, or yearly plan. Such a plan is made by a single teacher or by a group of teachers. It usually contains the following major divisions:

a. Subject
b. Aims of the unit
c. References
d. Introduction or overview
e. Outline of procedures for study
f. Test of progress

Examples of plans of this type may be found by consulting references appended to this chapter.

An advantage of the unit plan is that it represents a careful planning of a unified activity for children. It does away with the hasty daily assignment. Some of the best schools of the country are experimenting with this form of plan and believe that it greatly improves teaching and learning. In some experimental schools units are written up after they have been completed. These units represent records rather than plans but they are suggestive and are sometimes worked over in much the same way several times.

5. *The study guide.* The printed guide, worked out by a teacher for the guidance of the pupils in study, is often used as a plan for teaching as well as learning and constitutes the only needed material aside from textbooks, reference books, etc., for carrying out a profitable learning exercise. Such study guides contain the same major divisions as the unit plan. They are mimeographed or printed and are put into the hands of the pupils for use in the study period.

6. *Duplicated exercises.* Duplicated exercises sufficient for a daily lesson or for longer periods are used profitably by

many teachers in conducting the work in many of the school subjects. It is a common practice for the teacher to prepare and duplicate these exercises herself. Children seem to enjoy such exercises. They lead to systematic learning and teaching. These exercises resemble practice exercises commonly found in textbooks.

7. *Workbooks.* Commercial workbooks which generally are organized to furnish enough teaching material for a year or half year are taking the place of lesson plans, study guides, etc., in many schools. These workbooks are available for the subjects of reading, arithmetic, history, geography, language, etc. The chief objection to them is that with them available many teachers stop planning and thinking about teaching and hence quit growing. The books are valuable when properly used and help teachers to do systematic teaching while they are organizing materials of their own.

8. *Hasty notes.* Scarcely worse than no plans at all are the hasty notes which some teachers make in planning for their teaching. There may be some excuse for these when a teacher is working on several unit plans at once or in the early stages of her teaching when she has too many subjects to teach, but scarcely any excuse for the experienced workman or the one who takes pride in doing a good job.

Advantages of new-type plans. The advantage of plans of the newer types, on the whole, lies in the fact that teachers who make them must become thoroughly trained in teaching and that while making them they grow prodigiously in skill. In unit planning many difficulties are met, but if the teacher proceeds little by little and persists she will gradually build up a body of teaching material which will be invaluable. The disadvantage lies in the tendency to use such plans much in the same manner as the traditional textbook.

Features of a good lesson plan. In making any plan the teacher must hit upon some orderly arrangement of materials. Such plans are common in magazines and recent books on teaching. Some follow, in effect, the five formal steps of Herbart—preparation, presentation, comparison, generalization, and application. Some follow the modified technique of Morrison. Others attempt to follow Dewey's analysis of an act of thought. Some are merely lists of problems or outlines of topics. It seems to the writers that the essential elements of any plan are as follows:

1. A statement of the problem or subject
2. Aims of the unit
3. Reference material (selected)
4. Introduction (if needed)
5. Outline of procedure (including suggestive problems, suggestions for study, etc.)
6. Directions for the preparation of papers, talks, etc.
7. Assimilation test by which the student checks his progress

The arrangement of the details of the plan varies with the subject or activity. The objection to any plan of this type is that, theoretically, it predetermines what pupils are to learn and gives them no opportunity for freedom and initiative. Expecting children to develop freedom and initiative in the learning of skills and the assimilation of race experience as recorded in history, geography, and the like is, on the other hand, believed by some to be rather a visionary hope and not founded on facts, any more than the traditional emphasis upon subjects and compulsory method was founded upon sound psychological principles. Undoubtedly children learn best when they are active, but it is the teacher's business to direct them so that they will become active in ways that are profitable to society as well as to themselves. Well-developed plans help to do this.

Nevertheless, it should be understood that plans of all types should be flexible. It is a serious error to use a plan that obviously does not fit the situation. The teacher plans with as much foresight as possible and then if she finds that she has made a mistake she changes the plan as the situation seems to warrant. That is good sense and it is good teaching.

The treatment of subject matter in planning. As far as current writings indicate current trends in educational thinking, there are now two schools of educational thought quite firmly opposed in their attitude toward subject matter. One group believes in the great value of organized subject matter and feels that racial experience as found in books and in customs of society should be assimilated by children in a systematic fashion. At the opposite extreme are those who seem to feel that organized traditional subject matter has been too much imposed on children and that life and living is the most important subject matter for education. The latter group of thinkers regard subject matter as anything the child may experience. The reader may take his choice as to what he thinks subject matter is. For convenience in this discussion subject matter will be regarded as anything that is useful in the way of experience with which a child may be brought into contact during the process of his education.

In the latter sense it is apparent that the teacher must be well prepared in subject matter. She must know things that children are likely to understand and find of use in adjusting themselves to this changing world. Ignorance of all sorts is deplorable in a teacher. The teacher with no knowledge of what has happened and is happening in the world cannot be an effective leader of youth.

In planning the teacher must consider the types and

amounts of subject matter with which children should come into contact in carrying on their studies. She must plan how to use this material and use it sensibly. In this connection she must understand that the approach to subject matter may be a very different thing from the logical approach common in the older schools. She must know how children learn and in planning must arrange procedures accordingly. The subject matter must be related to the children's experience, it must be simple enough for them to assimilate; it must be detailed and concrete rather than general and abstract; children must be introduced to it and taught how to assimilate it; and definite reasons for assimilation must be developed in order that they may be willing to try. Immature children must not be expected to master organized subject matter before they have had experience with it.

The value of organizing subject matter around real problems and questions can scarcely be denied. Someone has said that the one inherent trait that makes human beings educable is that of curiosity. To arouse curiosity is to go a long way toward success in teaching. The artistic teacher is a master in the art of questioning and of arousing interest through the provoking of curiosity. She plans for this and incorporates it in her plans. Subject matter can have little meaning for children except as it touches them in some vital way and enlightens their lives and furthers their purposes. Forced feeding of subject matter is a profitless business.

Planning the classroom procedure. In making her plans for teaching the teacher must look forward to the recitation or discussion period with an idea of making socialized contacts profitable. A discussion may be indicated in the plan and all necessary preparation made for it there. A common

method of preparation for discussion is the preparation of a few pivotal questions. It is of course difficult to prepare questions in advance because one never knows exactly what may happen. A good method, however, is to outline questions or topics and have pupils prepare for them.

Some types of procedure, however, must be in the teacher's mind. She may confidently look forward to the following:

a. A question and answer recitation
b. Informal discussion
c. Individual reports
d. Committee reports
e. Incidental questioning
f. A lecture or teaching period
g. Demonstration
h. Dramatization
i. An illustrated talk
j. A review or summary
k. An oral test or examination

Any and all of these events will require knowledge of the proper procedure and planning for it. The success of the discussion will be assured if her plans have been carefully and skillfully laid.

In planning recitation procedure the teacher should look forward to having a variety of activities. The question and answer type of procedure becomes a deadly thing. Many types of procedure are appropriate and should be varied in accordance with the nature of the activity. The capacities of the pupils will determine how long and how detailed the recitation may be and what each individual may contribute. Many recitation periods may be teaching periods; others will be best used for summarization and review and the clearing up of doubtful points; others will be largely devoted to reporting, discussion, and listening. Diagnostic

and remedial work will sometimes be necessary as need for correcting errors appears in tests and in directed study. In planning for the various units it is advantageous to assign the probable amount of time which will be needed for assignment, study, recitation, and examination in order that teacher and pupils may hold themselves to some schedule and not waste time unnecessarily on any of these activities.

Checking the effectiveness of plans. The best test of the effectiveness of a plan is use. If a plan works it is a good plan; if it has worked in the past that is the best assurance that it may work again. There is little probability that a young teacher will know whether a plan will work or not, but an experienced teacher may become a very good judge of the workability of a plan. Elsewhere one of the authors has published a check-list for the unit plan which may be used by the reader in judging what a good plan of this kind should contain. There is also a set of standards which may be helpful.[1] See also Unit IV in *Directed Study and Observation of Teaching* for outlines and guides for the study and evaluation of lesson plans.

Summary. Lesson planning has changed much in recent years. Instead of merely the daily lesson plan the prospective teacher must master the making of unit plans in all their complex aspects. In order to plan well the teacher must be in possession of a sound philosophy of education, an adequate understanding of children and their methods of learning, a wide understanding of subject matter, a sound understanding of methods of procedure for various types and purposes, and a thorough training in the writing of plans. Lesson planning when rightly done goes a long way

[1] YOAKAM, G. A.—*The Improvement of the Assignment.* Macmillan, 1932, pp. 375–88.

toward insuring effective teaching. Without effective planning haphazard teaching must result, but no teacher should be a slave to a plan book.

STUDY QUESTIONS

1. What changes have been taking place in lesson planning in recent years?
2. What are the prerequisites to successful lesson planning?
3. What are the functions of the lesson plan?
4. What types of lesson plans are in common use?
5. What are the values and disadvantages of the commercial plan book?
6. What are the features of the daily lesson plan?
7. What are the features and values of the term outline?
8. What is a unit plan? Describe a typical unit plan.
9. What are the advantages of using the unit plan? The disadvantages?
10. What is a study guide?
11. What are duplicated exercises?
12. What is a workbook? Discuss its advantages and disadvantages.
13. What use may be made of hasty notes in lesson planning?
14. What are the features of a good lesson plan?
15. What subject matter does a good plan contain?
16. What provisions for recitation and discussion must be made in the plan?
17. How may the effectiveness of a plan be checked?
18. Discuss lesson planning by the experienced as contrasted with the inexperienced teacher.

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CHAPTER IV

The Assignment

Introduction. While writers on techniques of teaching have given some attention to the assignment, until very recent times the importance of the techniques of this activity has not been fully realized. Interest in the direction of learning, however, has revived an interest in assignment. Teachers are coming to realize that time and thought spent on planning and making the assignment are likely to affect profoundly the study habits of children and to result in economy in both learning and teaching. If good assignments are made, children can and will study independently with success, but if poor assignments are made children have failed and will fail to profit by the time spent in independent or supervised study. This is true for all forms and types of teaching.

The meaning of assignment. The assignment is the period in the teaching cycle when the teacher lays out the activities of the pupils in preparation for study. The term is common not only in teaching but also in the legal and military world. Literally it means the giving out of a task or job by a person in authority to one in a minor position. This meaning has prevailed in schools in the past, but a new meaning is gradually gaining use. The assignment in the new school may be a planning and organizing period. The teacher may not set any tasks. The children may propose and suggest the next things to be done and voluntarily undertake to do them. Little compulsion may be exerted by the teacher, but a great deal of suggestion and direction is sometimes necessary and in the early stages of any learning

is generally required. If children fail to work profitably the teacher is responsible; she must so manage that they will undertake the work cheerfully and persist in their efforts to solve the problems, collect the material, prepare the reports, do the practice, etc., that is necessary for successful carrying on of the activity.

Misuses of assignment. The assignment originated in the traditional school in which often a great deal of lesson hearing was done and very little teaching. Children were assigned impossible tasks and little thought was given to the problem of making it possible for them to perform the tasks. All that is changing, however. Hasty and careless assignments to which little thought is given are being attacked everywhere.

New developments. The importance of the assignment as a technique of teaching is apparent when one realizes that children need direction in their activities. They cannot enter into a new field without guidance. The assignment gives them that guidance in an expert way, prevents failure, provides for the arousal of interest, and makes success reasonably sure. Directed study is not possible without good assignments. Within recent years much progress is being made in organizing new-type assignments—contracts, study guides, work sheets, workbooks, etc. These new forms of the assignment offer many advantages and aid the teacher materially to improve technique. If children are to work independently, they must be guided in such a skillful manner that independent work will result in progress in learning and not in the learning of habits of dawdling and shirking. Children work cheerfully under the guidance of skillful assignment.

The necessity of training. Teachers cannot make progress in assignment without adequate training. The prep-

aration for this technique demands that they know their subject matter, have a broad understanding of children, their interests and their abilities to learn, be familiar with the materials of instruction available in the field of study concerned, know how to plan courses and direct the activities through guidance, have a broad view of the curriculum in which the study lies, know how to test in order to discover what needs emphasis as well as what has been learned, and be expert in using recognized techniques which are most effective in making the assignment to children. This implies a considerable amount of training. As a matter of fact, no one can teach successfully without a reasonable familiarity with the principles of assignment as well as adequate training in subject matter and in the psychology of learning.

Changing ideas of the assignment. The assignment is as natural an activity in teaching and learning as discussion, testing, teaching, studying, practice, or any other form of activity. Those who feel that all the older techniques are either obsolete or obsolescent are, in a manner of speaking, merely striking out against formalism in teaching in their efforts to dissuade teachers from assigning pages in textbooks and allowing children to flounder with the task of learning them for recitation. The writers are in complete sympathy with the desire to eliminate from the school the faults of the traditional procedure but they do not believe that any good purpose is served by urging that assignment, study, recitation, examination, practice, and drill be eliminated from the educational vocabulary. To be sure the nature of the assignment is not the same as it once was; but this does not mean that there is not an activity in teaching and learning which may properly be called the assignment.

The nature of the assignment is changing. Careless, hasty assignments never were characteristic of the good teacher; they are far less excusable now than in the past because experimental study and improvement of practice have pointed out new and better ways. The assignment of today is more likely to be a coöperative affair and is carried on by means of discussion among the members of the class guided and helped by the teacher. Often it is guided by the use of prepared mimeographed or printed material in the form of practice exercises, problems, outlines of reference material, job sheets including blue prints of procedure, or other definite types of outlined work to be accomplished. This type of assignment is definite, clear, adjusted to the needs of the pupils, interesting, and effective. The modern teacher is prepared with many types of such material for profitable use by children.

The necessity of variety. Assignments vary with the nature of the work being done. Outlines and work sheets are appropriate for some types of assignments and inappropriate for others. Recreational activities do not often require as careful and detailed assignment as work activities. Assignments which are appropriate for socialized activities would often be inappropriate for individual study or play. The assignment in an activity unit may be almost entirely a coöperative affair. In all cases, however, assignments should be definite and clear and should be possible of achievement; care should be taken to make them direct children to interesting and valuable experiences. Vagueness and indefiniteness are to be avoided in all kinds of assignments whether they are long or short, difficult or easy. Nothing discourages children quite so quickly as vague and indefinite assignments, unless it be assignments that are too long and unfair. The teacher who wishes to be success-

ful in training children in the art of independent study will look to her assignments.

Probably the most interesting and provoking type of assignment is the problematic type in which there is a problem to be solved or a difficulty to be overcome. Nevertheless, it is obvious that all kinds of assignments cannot be problematic. Often the teacher wishes the child to read a book for pleasure, to collect some information, to prepare a theme, to prepare a report, or to practice some needed exercises in order to memorize valuable information or to perfect some needed skill. In many of these types of assignment it is necessary that the child practice just as the golfer practices his swing or the marksman shoots at a target in order to gain skill. The proper procedure here is to be sure that the child sees the value of the practice or feels the need and that the task be set up definitely, clearly, and effectively. Where study periods at school or at home can be arranged so that the child is pursuing some problem with breathless interest, by all means the situation is most highly promising. It is even possible that study assignments should be, in so far as possible, of this type; but it is likely that many of the more prosaic assignments will need to be done, even in the most modern school.

The home assignment. Assignments may easily be too complex for the child to perform. In such a case, if at home, he merely tries to get his parents to do the assignment, worries and scolds about it, and perhaps ends in tears. For this reason it is questionable practice to give the child a home assignment to a complex problem, the learning of a new skill, or any particularly technical type of learning. Such work should be done under the eye of the teacher in a supervised learning period. Only among older children in high school or among college and university students is a

complex assignment that requires great independence of work and ingenuity in devising ways and means or a highly developed power in independent thinking, appropriate for home study; and even then such assignments should be approached gradually.

Necessity of systematic assignments. It is highly desirable that assignments grow out of the activities and interests of the pupil. Unless they do, the chances of effective independent work being done are small. There is no effort without interest and without effort practice is likely to be onerous and non-effective. Sometimes, however, with the very best efforts possible, the teacher is not successful in arousing the interests of children or at least in creating a situation where interests arise. In that case, if the assignment is important and necessary for future progress, there is no other way to do except to make it as clear and definite as possible and require that the child do it. Situations of this sort often arise even in schools which are making every effort to discover better materials and methods of instruction and to make the curriculum more childlike. When they do appear, the work must go on. It is the experience of the writers, however, that when assignments are clear and definite and when children are able to make progress in mastering them that they are generally happy and derive satisfaction from the work.

Characteristics of the good assignment. It is obvious that in the preceding discussion important characteristics of a good assignment are implied. A good assignment has the following important characteristics:

1. It is definite.
2. It is clear.
3. It is related to the old.
4. It is interesting.

5. It directs the learning activity.
6. It takes into account previous learning.
7. It removes difficulties.
8. It recognizes individual differences.
9. It is stimulating.
10. It emphasizes essentials.

This list of essentials implies that the teacher has a command of the art of teaching and that she has prepared herself so thoroughly that when she makes an assignment, she does so with full knowledge of the problems of learning involved and of the abilities of the pupils with whom she is working. She is not hasty or careless; she realizes that it pays to make haste slowly in order that the children may be ready to work successfully. With the skill of an artist in laying out his canvas, choosing his medium, and laying it on, she manages subject matter and children so that out of the situation a profitable experience is gained. The good assignment is characteristic of the earnest, conscientious, well-prepared and skilled teacher.

Objectives or aims. The objectives of the teacher in the assignment are implied in the characteristics of a good assignment given in the last section. It is her purpose to arouse the children's interest, to obtain their coöperation, to stimulate initiative, to clear up misunderstanding, to strengthen morale, and to outline the work to be undertaken definitely enough so that the purpose is clear, but not so definitely that no difficulty is met and no challenge experienced. She attempts to anticipate difficulties and to make it possible for the children to succeed in mastering them. All of these purposes are directed by the desire to have the children work or study profitably, grow in power, independence, and initiative, and enjoy a worth-while experience.

The assignment has perhaps as its major aim the motiva-

tion of study, since teachers realize that study is most effective when it is highly motivated. Unless instruction is supervised in person by the teacher (*i.e.*, unless children never study except when the teacher is available for conference when needed) the child has no other aid in the performance of a study task except that given in the assignment. It is almost universally conceded that the assignment period should be used in part as a time for motivation.

The only way in which the teacher can be reasonably certain that some preparation of the assignment will take place is to exercise great care in making it so that it may be definite, interesting, and fair. If she does that, it is reasonable to expect some effort from each of the pupils. If she gets results without careful assignment, it is because children are often somewhat more conscientious and purposeful than their teacher.

Individual differences. One of the aims of the assignment which has received marked attention in the past few years is the individualization of the work to be done. To this end the Dalton contract, the job sheet of industrial education, the guide sheet of the Morrison plan, workbooks, and outlines were devised. It is possible to provide in such assignments for individual rates of progress so that the bright are challenged and the backward are still enabled to make some progress. Sometimes the work for the different ability groups is laid out in levels so that each group knows what it is to do. In the Dalton plan pupils progress individually for a month through the contract without being held up by the backwardness of others. In any type of school, provisions for individual differences may be made by including in the assignment required and optional work or by making the assignment so flexible that there is opportunity for all.

Motivating the assignment. Motivation is looked upon by some educationists as a device for the educator who realizes that the traditional subject matter of education is adultlike and not suited to children, and that if they are to learn it at all some extrinsic form of motivation is necessary to make it palatable. In this discussion we shall refer to motivation as the activity concerned with the set-up of the situation for effective learning. In so far as possible it is hoped that there will be no necessity for extrinsic motivation as, for instance, in using a language game for the motivation of practice in correct forms of speech. It is rather the purpose of this section to suggest that in the approach to any learning situation care must be taken to discern the elements in it that are intrinsically interesting and to take advantage of them to promote the learning. In the assignment, the teacher will make every effort to bring out all the interesting aspects of the subject, to suggest interesting types of activity, to make contacts with previous experiences and to show how the proposed activity is an outgrowth of what has gone before. If this is done, the children will voluntarily undertake the assignment and profit by it. If, on the other hand, the problem is ignored much wasted time and effort will follow.

The activities suggested by the assignment should by all means be childlike. Those things which are appropriate for children to do must be chosen and undertaken. This is simply another way of saying that the aspects of a subject which are not too complex for children to understand must be noted and chosen for activities in the assignment. Due consideration of the immediate interests of the children must naturally follow. Yet this does not mean that there shall be a foolish pandering to the whims of children. Progress must be made. Guidance must be provided. The wis-

dom of the teacher must be exercised to prevent error. No one can know in advance all the aspects of the subject which may interest children; therefore, provisions for flexibility must be made. The assignment must be changed when it is advisable to change it and, in so far as possible, the immediate interests of children should be followed, provided they are worth following. Of the latter the teacher must be the judge. It is generally agreed among authorities today that imposing remote interests or values upon children is a profitless business.

The need for challenge. The removal of difficulties likely to prove insurmountable by children is one of the functions of the assignment in good teaching. It is hard, of course, to judge whether a given assignment does or does not contain such difficulties; but the experience and training of the teacher should make her reasonably expert in determining when they are present. She must not, on the other hand, remove all the difficulties from the task. Enough must be left to constitute a real challenge to effort. Children like to do things that are hard. They are often found struggling to climb a high fence, surmount a high wall, or solve a difficult puzzle. In doing these feats they will be the first to protest the officious help of a well-meaning but ignorant adult who does not understand that the victory is sweet when the fight is hard. In most cases it will be wise to provide a variety of challenges to meet the needs of children of different temperaments and varying backgrounds. It is seldom that a teaching situation will be equally interesting in all its aspects to all children who compose the group. Some children like to surmount walls but others would prefer to climb trees.

Types of assignments. Assignments may be classified into two major types on a chronological basis: (1) old-type,

or those which have been long in use; and (2) new-type, or those which have developed out of recent changes in education. The old type includes page, paragraph, topic, problem, theme, exercise, question, and experiment; the new type includes the project, unit, contract, activity, problem, and job. The older type is characteristic of the traditional school. The newer type is a development of the movement for directed study or directed learning.

The old type of assignment, given by the teacher without much consideration of the pupil, for the most part lacked interest, definiteness, clearness, stimulation, and direction. The assignment of exercises or problems in arithmetic, the preparation of a theme in English or the social studies, or the experimental assignment in the laboratory were often good assignments and were well made. In general, however, old types of assignment were too brief and too indefinite to stir up interest and arouse pupils to effort.

The advantages of new-type assignments are inherent in their form. For the most part they are an outgrowth of better lesson planning and organization of learning situation. They are unified, definite, clear, stimulating, directive, and challenging and require the exercise of much more skill and more definite preparation on the part of the teacher than the older types. For examples of these types of assignments and a more complete discussion of their advantages and disadvantages, see the reference in the appended footnote.[1]

It is highly desirable that the teacher who wishes to be in touch with the most recent methods acquaint herself with the preparation and use of assignments of the newer types as well as improve in the use of older types of assignment.

[1] YOAKAM, G. A.—*The Improvement of the Assignment.* Macmillan, 1932, Ch. III, pp. 36–88.

While it is advantageous to use work sheets, guide sheets, outlines, and workbooks in connection with the newer types of assignment, it is by no means impossible to use them without mimeographed or printed materials. Teachers who study the printed examples of new-type contracts, units, etc., may derive much benefit from them without adopting any particular form or type completely.

Making the assignment. While materials for making the assignment may be prepared in written form, the assignment of work for study must generally be done in oral form. In any case the teacher needs to discuss and explain the task to be done. In using written assignment material it may sometimes be unnecessary to do more than indicate the portion of the written material to be studied, but the practice of omitting discussion is bad and leads to a lack of interest on the part of the children and failure to benefit from the better organized material.

In making the assignment, the teacher must avoid acting like a commander in charge of troops. She must rather regard the assignment period as a time for coöperative thinking and for suggestion. She should invite rather than command. Her attitude will have a large influence on the attitude of the children. If she says "Let us do this" instead of "I want you to do that," she will have at least exhibited the spirit of coöperation and perhaps her pupils will catch the infection. The effects of her personality on the willingness of pupils to undertake an activity are bound to be very great. Therefore, it is well to assume the best possible attitude and to persist in the belief that children will be affected by it.

Steps in assignment making. The assignment generally proceeds in a series of rather well-defined steps. These may be outlined as follows:

1. Reference to a previous experience
2. Discussion
3. Proposal of a new activity
4. Discussion leading to acceptance of the activity
5. Explanations and clearing up of difficulties
6. Outlining the materials to be used
7. Distributing the tasks to be done
8. Overseeing the beginning of the work, if possible

It is well to record the assignment either on the blackboard, in the children's notebooks, or in the form of a mimeographed guide sheet or outline. If it is recorded it is less likely to be forgotten and the child may use the material as a guide in study. If there are no facilities for duplicating guide sheets the blackboard is an ever-present help in making assignments definite. Children understand through the eye often when they do not understand through the ear. Systematic recording of the assignment pays.

Time control. The assignment should be made at the most opportune time. Where the daily recitation is the rule, some writers favor the giving of the assignment at the beginning of the period. But if the assignment is to grow out of the day's experience, it is obvious that it must be given at the end. The most effective assignments are given when the class arrives at a point where it is obvious that there is additional work to be done. There is no evidence that any set time is the best for the assignment and much reason to suppose that the time may be varied. Nevertheless, this fact should not be taken as an excuse to be careless about the assignment and to arrive at the end of the hour with no assignment made. Managing the time for the assignment demands careful thinking on the part of the teacher.

The length of the assignment. The length of the assignment varies with the age and maturity of children. Independent seatwork assignments of fifteen or twenty min-

utes in length are common in the primary school. Home assignments requiring all the way from thirty minutes to an hour and a half are not uncommon in the middle grades. In the high school an hour is often required and in colleges and universities it is often stated that two hours should be spent in preparation for every one hour of class work. The truth of the matter is that there is little knowledge or judgment among teachers as to how long assignments should be. It is quite likely, however, that teachers in the upper grades, high schools, and colleges greatly over-assign and cause a needless amount of dissatisfaction among pupils without marked success in causing them to study. Assignments should be reasonable in length. There should be some agreement among the different members of the staff of a school as to home assignments so that each teacher will not demand from the child so much home work that children in their teens will be spending five or six hours five nights of the week in burning the midnight oil.

The teacher will often be justified in taking the entire class period for making the assignment. This is particularly true when the unit plan is being used and a new unit is being undertaken. No definite rule may be set down as to how long a time the assignment shall take. It is better to say that it may take a little time, ten minutes perhaps, some days and a long time on other days. At the beginning of a new subject or unit it is likely to consume a considerable share of class time.

Materials of the assignment. The technique of assignment involves skill in the handling of special materials, among which are the textbook, special reference books, maps, charts, pictures, slides, guide sheets, workbooks, and practice materials. The choice of materials suited to the needs of the children is a very important matter and necessitates a broad familiarity with the materials of the field

of the subject matter, including pedagogical materials of various kinds. The teacher in training should come into contact with the very best of these types of material in the training school and should study carefully current commercial materials. It is also important that she receive training in the preparation of teacher-made materials because in many small schools and poorer districts there will be little, if any, commercial materials of the kind available. In addition to an interesting and well-arranged textbook, at least a few related reference books, as well as the usual dictionary and encyclopedia, are needed in order to enrich the subject. Pictures, charts, maps, slides, and other special materials are necessary to enliven the subject and make it concrete. Guide sheets, outlines, and syllabi are highly useful in directing the independent study of children and aid tremendously in good assignment. Tests are necessary for ascertaining the individual needs of children. With all of these things the teacher must be familiar and she must make use of them in making her assignments stimulating to the pupils.

Visual and other aids. The assignment, as a period of motivating, planning, and purposing, affords an opportunity for the teacher to stimulate interest through the judicious use of visual material. A clever teacher can often use the blackboard advantageously for this purpose, outlining the subject, drawing quick sketches, making rough maps, diagrams, etc., to stimulate interest and make the problem clear in the minds of the children. Commercial maps, graphs, charts, slides, etc., are more accurate and often very useful in the assignment. The teacher must learn how to use them to stimulate interest. Workbooks, guide sheets, and practice materials are advantageous and save the teacher much time in needless duplicating of materials. But probably the most effective devices of all are the original outlines, guide sheets,

and practice exercises devised by the teacher to fit the needs of the group, for these are likely, in the hands of a good teacher, to be better adjusted to the needs of the group and to tie up the new problem more closely to the experiences of the pupils.

Need for familiarity with materials. In making the assignment it is the duty of the teacher to be thoroughly familiar with the materials which are to be used in connection with the new activity, whatever they may be. She should be able to indicate the relative importance of the materials and how to use each type of material indicated in the assignment. She should attempt to individualize instruction at this time by assigning certain duties to children of special abilities and should be as helpful as possible without doing the work for the children. Care in handling the materials well in the assignment will prevent failure in the study period.

The value of duplicated materials. The value of the hectograph, mimeograph, or other duplicating machines for the preparation of materials to be used in the assignment and study periods can scarcely be overestimated. Poor teacher-made materials are probably less effective than well-made commercial materials. There is, however, a freshness and genuineness about teacher-made materials that make them especially effective in the hands of a good teacher. Teachers who are permitted to exercise their ingenuity in the preparation of original seatwork exercises, guide sheets, outlines, tests, and other duplicated materials are enjoying the same opportunity of creative learning that is advocated as so necessary for children by progressive thinkers today. Nothing causes teachers to grow quite so much as opportunities to engage in curriculum making and in the creation of new types of teaching materials. Such

materials also have many advantages for children, making unnecessary a great deal of routine copying and furnishing definite guides in learning which, in a measure, take the place of the teacher while she is busy instructing other groups of children. Practice materials of a well-organized type furnish opportunities for children to work on their own difficulties individually, to check their own results, and to know definitely whether or not they are making progress in learning.

Skillful use of these and other materials in the assignment goes a long way toward creating interest, defining the work to be done, preventing failure, and insuring progress. Effective independent study is greatly promoted by them. The wise use of a textbook, while a necessary part of the whole process of teaching, cannot be as effective as an enriched type of teaching in which various devices are present to guide the child in his use of the materials of instruction.

Evaluating the assignment. The effectiveness of the assignment is measured, by and large, by the results of the independent work of the pupils. If children show in the recitation, discussion, and study periods that they are interested in the subject and that they have succeeded in making progress in learning, part of this can be attributed to the effectiveness of the assignment. The effect of the assignment alone, is, however, hard to evaluate except by experimental procedure. A practical means of evaluating the effectiveness of the assignment, however, is for the teacher in retrospect to check over the activities of the assignment with a good check list. A detailed check list for the oral assignment can be found in *The Improvement of the Assignment.*[1] A similar list for checking guide sheets, unit plans, and con-

[1] YOAKAM, G. A.—*The Improvement of the Assignment.* Macmillan, 1932, Ch. XVI, pp. 368–75; 375–84.

tracts is also included there. Standards for evaluating both types of assignments are also suggested.

An objective observation exercise for evaluating assignments is given in the accompanying workbook, *Directed Study and Observation of Teaching*. An objective test of assimilation of the principles developed in this chapter is also to be found in the same workbook, Unit IV.

STUDY QUESTIONS

1. What movement in education emphasizes the need for effective assignment technique?
2. What need of children makes the assignment important?
3. What changes in the meaning of the assignment have occurred in recent years?
4. Does the assignment necessarily involve compulsion?
5. What training is necessary in order that teachers may make good assignments?
6. What arguments for the abolition of assignments can you advance?
7. In what ways do assignments vary with the work being done?
8. What is probably the most interesting type of assignment?
9. Why should assignments grow out of the activities and interests of pupils?
10. What are the essential characteristics of a good assignment? Discuss each.
11. What are the objectives or aims of a good assignment?
12. Discuss the motivation of study through the assignment.
13. Enumerate the different types of assignments, old and new. Discuss the advantages and disadvantages of each.
14. Discuss the making of the assignment.
15. Enumerate the materials of the assignment and discuss the importance of skill in their use.
16. How may the assignment be evaluated?

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2. BLACKHURST, J. H.—*Directed Observation and Supervised Teaching.* Ginn, 1925, pp. 203–08.
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3. BURTON, W. H.—*The Nature and Direction of Learning.* Appleton, 1929, pp. 445–65.
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16. WRINKLE, W. L., and ARMENTROUT, W. D.—*Directed Observation and Teaching in Secondary Schools.* Macmillan, 1932, pp. 105–21.
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CHAPTER V

QUESTIONING

Introduction. Ability to ask questions has long been regarded as one of the chief qualifications for successful teaching. In the old school in which the teacher did little but hear lessons, undoubtedly to be able to question successfully was one of the most necessary of arts. The question and answer method in the recitation of the old type was an almost universal method of teaching. Times have changed; methods of the recitation have been altered so that the old-time teacher would find himself in a strange world; but still teachers question and children answer. To be able to formulate stimulating questions and to answer the questions which children ask is necessary for successful conduct of certain types of teaching activities. Particularly in the preparation of unit plans, study guides, and work sheets, the teacher is required to formulate questions that will stimulate the child's curiosity and arouse his desire to learn. Questioning is one of the techniques of teaching which all teachers will do well to study.

Questions defined and classified. Previous writers on questioning have classified questions into two major types, "natural" and "formal." A natural question is one which is asked because the questioner wants to know the answer. Children's spontaneous questions are of this type. The formal question is the type asked by the teacher in her attempts to stimulate some type of response on the part of the pupil. Unfortunately most of the questions asked in the school have in the past been teachers' questions. Chil-

dren's questions of the natural type have annoyed parents and teachers for generations; yet the spontaneous questions of children are probably of great importance in indicating their interests and suggesting lines of inquiry of great timeliness for them. It is unfortunate that children are all too often put off with, "Don't ask so many questions. Be still. You will drive a person mad." It is noticeable that children of pre-school and primary years are full of spontaneous questions but that a few years later it is very difficult to get them to volunteer questions of any sort.

Investigations of children's questions. An investigation by Helseth [1] seems to suggest, however, that children in the upper grades can ask very interesting questions when they have the opportunity. A later investigation by Gatto [2] of the questions asked by children in the classroom resulted in gathering 4190 questions from 408 individual pupils and 20 case studies. The questions fell into 22 classes. Gatto's study reveals certainly no lack of ability on the part of children, if given a chance, to raise questions of a great variety of types. Helseth found that children could ask better questions when trained to do so. Stevens [3] noted that children's questions are a sign of interest and an indication of a desire for knowledge. Moore found that children can ask questions as well or better than those asked by teachers.[4] These studies suggest that teachers may profit much from a study of children's questions as well as from some investigation of the nature of questions and the art of questioning.

[1] HELSETH, OLGA—*Children's Thinking.* Teachers College, Columbia University, Contributions to Education, No. 209, 1926.

[2] GATTO, F. M.—*Pupils' Questions: Their Nature and Their Relationship to the Study Process.* Ph.D. Dissertation, University of Pittsburgh, 1929.

[3] STEVENS, ROMIETT—*The Question as a Measure of Efficiency in Instruction.* Teachers College, Columbia University, 1912.

[4] MOORE, NELLIE E.—"An Analysis of Study Questions Found in Textbooks for Intermediate Grades." *Elementary School Journal,* Vol. 27 (1926), pp. 194–208.

Characteristics of good questions. In the preceding discussion it was implied that questions are interrogative statements which stimulate the learner either to recall facts that are thought valuable or to search for the answer to questions or problems which he does not now know. The formal question of the teacher is a means of stimulating the child's mental activities; the child's question is an indication of a need, doubt, or perplexity which has occurred in his thinking. It behooves the teacher, then, to know the characteristics of a good question, to take care in the formulation and asking of questions, and to study children's questions as indicative of their needs.

Characteristics which belong to good questions seem to be as follows:

1. *Clarity.*—The question must be constructed in such a fashion that the child easily understands what is wanted even though he may not know the answer to the question. The same qualities that make a sentence clear make a question clear. For example, "Who is the king of England?" is a good question but, "Who is the king?" is a question that cannot be answered until the child knows what king or king of what.
2. *Simplicity.*—A question may be a good question for adults and be a very poor question for children. "What is the nature of the theory of relativity?" is a perfectly good question but not a question that a child can answer. The language of the child must be used in formulating questions. A teacher should carefully scan a proposed list of questions to see whether or not there are not some unusual terms which may make it difficult or impossible for the child to answer.
3. *Challenge.*—A good question stimulates the child to think, that is, to compare, evaluate, and draw inferences and conclusions. "What is the capital of the United States?" is a question of the fact type which makes no appeal to the child's ability to reason but simply requires him to exercise his memory. Such questions are appropriate for a quiz or review and

only then as a part of a series of questions among which many are of the thought type.

4. *Specificity.*—Questions should require specific rather than general answers. The child should not be encouraged by the teacher's questions to bluff and generalize without having some data on which to base his answer; nor should he be permitted to give vague and general answers to specific questions. "What are the universal characteristics of scholarly men everywhere?" may be a poor question for children because they do not have sufficient experience to generalize. But "What birds have you observed in the last week?" may be properly put because the child has sufficient information available to make his answer specific and exact.
5. *Definiteness.*—The question must be so stated that it permits one answer only. "Who was Washington and what did he do at Valley Forge?" is a poor question, or rather two questions put as one. It cannot be answered by the child without a mental readjustment during the process of answering. "Who are the people of Mars?" is a poor question because it is impossible for anyone to answer it definitely. "Of what race or races are the people of England?" is a definite question and may be precisely answered.

To embody this list of characteristics in any list of questions will challenge the ingenuity of the teacher, but it is worth trying to do so.

It is implied in the foregoing that questions should be adapted to the maturity of the learners and that they should be interesting, challenging, and thought-provoking rather than of a pure routine character. They should also suggest the limits of the task which the learner is expected to accomplish. The latter is particularly true of questions which are given for guidance in study and of review questions or questions of assimilation; for the child takes his cue from the questions which are asked and is likely to feel that the questions indicate the relative importance of the ideas under consideration. Questions should generally be simpler than

the language used in the textbook. The teacher should interpret the textbook for the pupils, particularly if it is difficult for them. Questions should often require comparison and evaluation and should compel the child to reorganize his ideas before he is prepared to answer. Organization and thought are often excluded in teachers' questions because such questions are hard to make; it is far easier simply to ask, "Where was Valley Forge?" than to ask "What is the significance of Valley Forge in American History?" The latter question requires a larger view of the subject.

Problematic questions are particularly valuable in teaching because they are stimulating to the child's thought powers. "What was the greatest contribution made by Washington to the American people?" may offer a great challenge to a group of children, whereas, "On what date did Yorktown fall?" has little challenge because it may be answered with a minimum of thinking. Problematic questions raised by the pupils which represent real gaps in their field of knowledge are very stimulating motivators of mental activity. Teachers should be constantly on the lookout for the most stimulating questions they can find.

It is a good practice for the teacher to try to answer her own questions before directing them at children; for she may find that she has been obscure in the statement of some of them, that her own thought was not clear when the question was formulated, and that she can improve the form and content of questions through reflection.

Questions should conform to the immediate objectives of the teacher. It is obviously foolish to ask a series of questions which bear little relation to the objectives. Such questions will lead the pupils astray and result in the loss of time and effort.

The purpose or function of questions. The fundamental purpose of questions is to stimulate children to think. The teacher often uses them for another purpose almost entirely; namely, to find out how well the child has remembered what he has been told or has studied. The latter purpose of questioning is not the major or most important purpose, but it is legitimate when used properly. Questioning can reveal to the teacher the mental processes of the pupil; the range and breadth of his knowledge. Questioning may reveal lack of assimilation by the child of even the basic information necessary in thinking about a subject or inconsistencies in his thinking about it and indicate to the teacher what remains to be done in order that the child may think more adequately. By questioning them the teacher may find that pupils are poor readers, careless in the interpretation of questions, poor in vocabulary, unable to locate information, poor in organizing ideas independently, weak in comparison, evaluation, and judgment. Doubtless the teacher can find these things out more readily through a well-organized written test, but even oral questioning can reveal a good deal concerning the pupils' mental processes.

The value of questions in study. Questions may be used to emphasize the facts that children should learn. Many teachers make much use of study questions in assigning lessons to children. Unit plans, workbooks and study guides make prolific use of questions of various types for the purpose of indicating the important divisions of the subject. For instance the following questions indicate the important aspects of the subject, "Balloons."

1. What is a balloon?
2. Where did balloons originate?
3. How many different kinds of balloons are there?

4. What are the most important features of each kind of balloon?
5. What are the important uses to which balloons are put?
6. What is the probable future of the balloon?

Finding the answers to these questions would constitute a fairly comprehensive study of the balloon and would tend to help the child locate information, assimilate, compare, evaluate, and come to conclusions about balloons.

Other uses of questions. Even a few random questions by the teacher, if cleverly put, will reveal what children are interested in. Some care to encourage children to raise questions that perplex them and some systematic recording of questions which children ask will soon reveal to the teacher many of the things that concern them. Questions reveal curiosity and curiosity is an important factor in learning.

The organization of materials may be directed by a series of questions as indicated in the example above of balloons. The teacher might indicate the same organization by an outline, but there is something much more stimulating about a list of questions. Any type of organization may be directed in this manner. Such direction is helpful to children when they are beginning to learn how to study or when they are first encountering a new field.

It has long been noted that in those subjects in which definite problems and questions were assigned to children for mastery greater effort was made by pupils to do the work. The reason for this is that immature minds like to have definite objectives. Many teachers are now using problematic as well as mere fact questions in directing the study of the school subjects with good effect. If the questions are well chosen and stimulating, this method is an undoubted aid to children in their attempts to assimilate new material.

Questions have been used for review purposes for centu-

ries. In the learning of the so-called catechetical type, this was the sole type of exercise used in order to teach children certain facts. The method would hardly be acceptable to-day. But if the teacher will mix in with questions of fact, questions of judgment, and questions of interpretation and appreciation, it may still be used as a means of summary, review, and preparation for tests of assimilation.

Questions may also be used for drill purposes. In this type of exercise, they should be organized in order from simple to complex. It is a question whether or not they should follow the chronological order of the material. Some think that they should be in a mixed order so that the child may be required to think rather than to memorize. Topical rather than detailed questions may be used to advantage in order to improve the child's power to organize what he knows.

The advantage of measuring progress by questioning, rather than by objective tests of the multiple-choice or other objective types, is that verbal and written answers to questions force the child to organize his ideas and give him practice in expression which is undoubtedly very valuable. The disadvantage is that children with limited linguistic ability may do far less with this type of response than they will when allowed to check objective tests.

Questioning as a means of getting an understanding of the materials should be used both by the teacher and by the pupil in class and study exercises. The teacher's questions will bring out the points that the child has overlooked; the child's own questions, raised as he studies the material, will reveal to him interesting points to consider and additional reading to be done.

Types of questions. Questions may be roughly classified from one point of view as fact and interpretational or thought questions; and from another as memory questions and recog-

nition questions. A fact question calls for the ability to answer in terms of data already in existence, which may be known or unknown. "What is the largest wheat-producing region in the world?" is a definite fact question. An interpretational question, on the other hand, requires the student to draw an inference from data which are known but which cannot give the answer to the question as known. "Why do you like this story?" is a question which requires thought and interpretation on the part of the pupil, while, "Do you like this story?" is a mere question of fact and can be answered without thought. Memory questions are those which must be answered with reference to something that has been learned in past time. Recognition questions, sometimes called informational questions, are those which can be answered by observation or examination of data by the student without reference to memory. The latter might be called questions of comprehension.

Gatto's classification. There are undoubtedly many ways in which questions may be classified. Previous writers have made the attempt to do this in various ways. The writers will take advantage of a classification worked out by Gatto [1] after he had examined the previous classifications of others:

1. Memory: "Where is Duluth?"
2. Organization: "How did people in Colonial days travel?"
3. Causal reasoning: "Why is a blast furnace never allowed to get cold?"
4. Evaluation: "Is it a true story?"
5. Inference: "Would you like to go to Florida in winter?"
6. Information (problem): "What makes leaves green?"
7. Comparison: "Which was the greater man, Washington or Jefferson?"
8. Analysis: "What makes this flower beautiful?"
9. Interpretation: "What does census mean?"

[1] GATTO, F. M.—*Op. cit.*

The above classification is based upon the analysis of the mental function involved in answering the question. In Dr. Gatto's complete classification of questions, finer differences are drawn than in the above. The nine types above seem, however, to be sufficiently fine for practical use. Current criticism of teachers' questions bewails the fact that they so often demand mere memory of words for their answer and that they do not require the pupil to think in order to answer them. Writers on questioning have been unanimous in their insistence that the main purpose of asking questions is to stimulate the thought process. If teachers would make some study of the nature of questions, such as is implied in the classification given here, they would improve in the art of questioning. When writing a list of questions, the teacher should check through the list to see how many kinds of thoughtful reaction she is likely to elicit from pupils.

Two major types. The foregoing classification might be divided into two major types—memory and recognition questions. It will be clear to the reader that a memory question may involve fact, organization, causal reasoning, comparison, evaluation, inference, and interpretation. Likewise a problem question (*i.e.*, that type to which the answer is not a fact definitely memorized and known at once) could involve the same types of mental functions. It will also appear at once that a recognition question, involving power to comprehend and interpret present data, may require fact, organization, etc., in the process of answering it. But such a question could also involve remembering the data which are required to answer it; it would then be a memory question as well as an informational question. It seems to the writers, then, that the best classification of questions for ordinary use ould be as follows:

A. Memory
1. Fact
2. Organization
3. Causal reasoning
4. Evaluation
5. Inference
6. Comparison
7. Analysis
8. Interpretation

B. Recognition
1. Fact
2. Organization
3. Causal reasoning
4. Evaluation
5. Inference
6. Comparison
7. Analysis
8. Interpretation

But it will also be apparent at once that any combination of these mental functions may occur at any time, such as memory-fact, memory-causal reasoning, memory-inference, or recognition-fact, recognition-causal reasoning, recognition-inference, or another combination. It appears, then, that one will seldom find a pure type of question involving a single mental function, but rather a memory-fact question or a recognition-fact question or a memory-interpretation question or a recognition-interpretation question. With those two types judiciously mixed, the teacher should be able to do a good deal with questioning.

Questions may also be spoken of as detailed questions or topical questions. A detailed question asks for a simple fact, "What happened on July 4, 1776?" The topical question, as for instance, "What were the causes of the American Revolution?" asks for a connected statement. The only difference is that one requires a single statement for the answer while the other requires a discussion of a topic.

An error classification. Questions are further discussed and classified in accordance with the errors made by the teacher in using them. The leading question is one commonly misused by teachers. "George Washington was better known for his character than for his military genius, was he not?" is a leading question because the child gets a key to the answer from the question. Another type of poor question is

the pumping question: "Who was Columbus? What did he do? When did he do it? Why? What were the results?" The teacher fires at will and the pupils respond in one-word answers. A third type of bad question is the double question: "Who was Washington and why was he famous? One at a time, please." Another poor question is the direct question: "Was George Washington well known for his military genius?" The alternative question is another bad type: "What or who was the cause of the Thirty Years' War?" Nobody could answer until he knew *what* or *who*. Faulty questioning on the part of the teacher is generally due to haste, to unfamiliarity with the subject, or to muddy thinking. One cannot ask good questions without clear thinking. Even one who knows that he does not know is in a position to ask a good question; but when he doesn't even know that he does not know, pity the poor questionee.

Classification according to teaching function. Questions have been classified by others in accordance with their teaching function:

1. Drill questions
2. Review questions
3. Developmental questions
4. Examination questions

This classification will scarcely add anything to the discussion of types of questions because the functional analysis preceding is more basic. Drill, review, developmental, and examination questions will obviously be made up of the types previously discussed.

Technique or procedure in questioning. 1. *Asking questions.* Good technique in questioning involves asking enough questions so that pupils are stimulated to activity, but not overwhelming children with a barrage of questions which require a minimum of thought on their part and the giving

of short or one-word answers. Too many questions lead to too much teacher activity and not enough activity on the part of the pupil. The repetition of questions needlessly is another fault to be avoided, as is the giving of a question, giving the pupil's name, and then following immediately by a repetition of the same question. In the latter case the child whose name is called is likely to think of the answer while other pupils take time out for rest. Another bad practice is to have a fixed or set order of giving out questions to a class, such as proceeding alphabetically or row by row. Ideally, all children in the class should participate in the discussion and such practices discourage a socialized response.

Questions should be asked in a pleasant manner, not too hurriedly and not in a fashion calculated to create a nervous tension in the pupil and discourage him from thinking. Nervous haste on the part of the teacher will encourage the same spirit among the pupils and disconcert them. Firing many short questions at children and attempting to pump out of them the answers to questions which they do not know is an equally bad practice.

The distribution of questions in such a manner that the majority of the pupils in a class will respond or take part in a discussion is another technique which the teacher must study. Bad practices are calling on the bright pupils at the expense of other members of the group, calling only on those who raise their hands, calling in a fixed order, calling exclusively on the inattentive pupils or the dull, etc. The chief fault in all these methods is that only part of the pupils are taking part in the group thinking at any given time.

2. *Treating the pupils' answers.* Quite as important as the asking of questions is the manner in which the teacher accepts the answers of the pupils. In the first place, answers cannot

be adequate if the questions are framed in such a way that they are not clear and understandable. Often when pupils fail to answer adequately, the fault lies in the teacher's question. Either the question itself is incoherent, or she is asking for things that children should not or cannot reason out for themselves, or they do not know the answer. Always to take the point of view that the last explanation is the cause of their failure is dangerous because it leads to unfairness and to failure on the teacher's part to improve her questioning.

Faults in the children's answers which are quite common are brief and incomplete answers, *yes* and *no* answers, irrelevant answers, thoughtless or careless answers, pure guesses, and wrong answers due to lack of information or inability to reason. The answer is an indication of the pupil's progress or lack of progress and of his ability to think. Only occasionally is the answer a willfully inaccurate and deliberately faulty one. It is far safer to assume that faulty answers are indicative of the need for remedial teaching than to assume the opposite. The teacher should know in a general way just what is the cause of failure on the pupils' part because of her familiarity with them. She should have some idea as to the nature and extent of their knowledge and of their ability to think. If a child is hasty, careless, lacks industry, or lacks ability, she may frame her questions in such a way as to take these factors into account and thus do much to insure better answers. She may discourage guessing at the answer by emphasizing the need for accurate information and by so framing the question that guessing is difficult. The teacher who makes much use of the direct question and the alternative question encourages guessing. The one who uses questions which can be answered only in terms of known data or interpretation of known data will improve the child's ability to think.

When a question has been asked, time should be given to the group to think and formulate the answer and then some pupil may be asked to answer the question. When the child has answered, the teacher should refrain from repeating the pupil's answer. This is a nervous, time-consuming habit. While the child is answering, the teacher should refrain from unduly prompting him because interfering with his answer interferes with his thought and prevents him from working out the answer. When a pupil has given the answer as best he can, the teacher should refrain from making sarcastic comments, reprimanding him, and in other ways treating his answer disrespectfully. If the child is a bluffer, she may show him up by asking the question over again of some other child, by privately expressing her disapproval of his bluffing habit, or by reprimanding him in a kindly way for his attempt to evade the issue put to him by the question. The practice of bullying, in general, discourages children who may be timid and often merely amuses the lazy bright child without bringing about a reform. If the child is ignorant but has done the best he can, it is unfair and unkind publicly to make a spectacle of him. In handling the answers of pupils, the teacher must make every effort to be fair in order that the pupils will feel free to respond and will be encouraged rather than dejected by the teacher's comments.

Outcomes of questioning. The outcomes of a period in which the teacher has asked questions of the pupils may be stated briefly as follows:

1. The limitations of their knowledge and of their ability to reason should have been discovered.
2. The need for new knowledge, for more thinking, should have been established, or progress should have been made toward this end.

3. New interest and new curiosities should have become apparent.
4. Errors in knowledge and in thinking should have been cleared up.
5. Opportunities for the statement of questions which have arisen in the minds of the pupils should have occurred.
6. A good deal of reorganization in the knowledge of the pupils and in their thinking should have taken place.
7. Considerable connected talking should have been done by the pupils; complete rather than fragmentary answers should have been the rule.
8. Important points and essential conclusions should have been emphasized.
9. Improvement in the attitude of the pupils toward the subject should be apparent.
10. Some information with respect to the study habits and abilities of the pupils may have been gained, not every day, but often.
11. The extent and the character of the pupil's preparation for the discussion should have been ascertained.
12. Definite impressions of what the important aspects of the subject are should have been gained by the pupils.
13. Definite impressions of the progress or lack of progress made by the pupils should be gained by the teacher.

Each discussion, review, or test period in which questioning has been the principal technique employed by the teacher should have left each pupil with the sense that definite progress in the mastery of ideas and the clarification of thought has been made.

Summary. Questioning as a technique used in teaching no longer has the universal use as an exclusive technique that it once had. Methods of discussion, coöperative planning, directed study, and objective testing have taken the place of the question-and-answer method as the almost exclusive method of the classroom. There is still a large use for questioning in teaching technique, however. In socialized discussions, in problem and project teaching, in

activity situations, and elsewhere the teacher will find much use for expertness in questioning. What has been written in this chapter establishes principles for good technique in the use of questions and for measuring in a general way the outcome of the process.

STUDY QUESTIONS

1. What is the importance of the question as a means of stimulating the mental activity of children?
2. What is the importance of spontaneous questions of children in teaching?
3. How much has been done to classify questions properly?
4. Enumerate the characteristics of good questions.
5. Why have problematic questions come into such general use?
6. What functions can questions perform in the act of teaching?
7. Discuss the use of questions in guiding study activities.
8. What is the value of questions as a measure of progress in learning?
9. Compare oral questioning with written objective examination as a means of testing progress. What are the advantages of each?
10. Check the memory questions in this list of study questions. Which predominate, memory or thought questions? Criticize the form of each question.
11. Try to identify questions of the following types: fact, organization, causal reasoning, evaluation, inference, comparison, analysis, interpretation.
12. Are the questions in this list pure types? Indicate the reasons for your answer.
13. Enumerate the chief faults of teachers in questioning. Do the same for children's answers.
14. Discuss the desirability of being sympathetic with the answers of children.
15. What are the chief outcomes of questioning?
16. How may the effects of good questioning be measured by the teacher?

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CHAPTER VI

DIRECTING CHILDREN'S STUDY ACTIVITIES

Introduction. Within the past two decades students of the art of teaching have learned that a new responsibility is added to the older responsibilities of teaching. Instead of merely assigning lessons to children, letting them struggle with the assignment for a period or two, and then calling them together for an oral quiz to find out what they have learned by their own efforts, the teacher must accept responsibility for stimulating their interests and guiding in an effective manner their activities during the study period. She must supervise or direct their study and she must take precautions so that, when they study, they have a reasonable chance to succeed at the task, if not immediately, then eventually. Directing study is a new and interesting challenge to teachers that must be met effectively.

Directing study explained. Not only is directed study poorly understood by a large number of teachers, but even study itself is a term which is rather loosely used. McMurry [1] wrote, over twenty years ago, that study included all the aspects of an act of thinking. He analyzed it and enumerated the factors involved in it. Yoakam [2] more recently summarized what previous writers had written on the nature of study, and found that it is a purposeful mental activity of the work type. It may include observation, practice or drill, associative learning, and problem solving. In ordinary usage it involves all the purposeful work activities of the

[1] McMurry, F. M.—*How to Study and Teaching How to Study.* Houghton, Mifflin, 1908, pp. 12–27.

[2] Yoakam, G. A.—*Reading and Study.* Macmillan, 1928, pp. 77–111.

school which a child does by himself, either in or out of school. Real study is, however, problem-solving or reflective thinking, in the opinion of many. Perhaps it is more accurate to say that study is of different degrees of complexity, paralleling in this respect all mental activity. The highest type of study is that in which reflective thinking is involved. In schools of an earlier day great emphasis was placed on memorizing as the chief act of study. Teachers and children still think of study largely as reading and memorizing.

Supervised study, directed study, and directing learning. For a long time the independent study of children was undirected and went on as a type of trial-and-error learning. Then about two decades ago an interest in directing the study of pupils arose. *Supervised study* was for a time heralded as a new type of teaching calculated to reform the study methods of children. *Directed study* and *directing learning* succeeded supervised study as a more basic attack upon the problem, for supervised study was, in effect, an administrative scheme for dividing the school day into study and recitation periods under the direction of the teacher; and it soon became apparent that directing study involved an understanding on the part of the teacher of the whole learning process as well as the knowledge of her subject which had previously been assumed.

Organized plans for directing study. Many different experiments in directed study followed. The Dalton Plan with its contract and the Morrison Plan with its study guide and unit plans are perhaps the most famous of these. Winnetka, with a scheme for individualizing instruction, has been scarcely less influential. Out of all these experiments has emerged better understanding of what is involved in directing the learning of children. It is now recognized that

it is probably more important to teach a child how to work than it is to teach him facts. Certainly attitudes and appreciations are as important, if not more important, than isolated facts, and skills without attitudes and appreciations are of doubtful worth in developing the individual.

The peculiar task of the elementary school. The elementary school has for its peculiar task the development of the fundamental skills of reading, writing, and numbers. It is also necessary that children come into contact with geography, history, science, health, music, and the other arts and that they develop fundamental attitudes toward and interests in the major fields of human activity, as well as enjoyment and appreciation of literature, fine art, handicrafts, and music. In order to enjoy the benefits to be derived from these various kinds of experiences, they must grow in power to observe, read, communicate with others, and to think about and interpret the meaning of what they observe and experience as well as to learn how to find the answers to new problems as they arise. Teaching how to study, then, involves teaching the child how to do mental work. The elementary school must lay an adequate foundation in the skills and give the child a rich opportunity to develop power to investigate new fields and to grow in a changing world. The secondary school builds upon this foundation by enlarging the experience of children in a broad way, as well as by giving them an introduction into the fields of higher mathematics, science, economics, and the like, and broadening and enriching their contacts with the leisure activities of the world.

What teaching to study involves. Teaching the child how to study involves, then, developing attitudes, informations, skills, and habits of a more or less general character as well as teaching children how to think and work in the

various fields of human thought. It consists of building systematic work habits, involving the ability to observe, read, remember, and to think about and use the ideas that have been learned. Reading, thinking, writing, and talking, using ideas, and planning activities of a constructive nature are involved in teaching how to study. Practically all subjects and all activities furnish opportunities for teaching the child to study. Study may take place in the presence and under the immediate direction of the teacher, or it may be independent mental work. It is the common opinion today that it is the purpose of the school to make the child independent of his teachers and thus equip him with the ability to read, think, and act for himself. Looked at from this point of view, to have taught a child how to study is the culmination of all the efforts of the teacher because in doing this she will have developed admirable traits of character—independence, initiative, judgment, dependability, perseverance—attitudes and interests of a permanent sort in worth-while things of life, a broad experience in literature, social studies, science, etc., abilities or skills in reading, observing, the use of number, communication, and thinking, and fundamental habits of mental work that will serve the individual well in whatever kind of life he may be called upon to live.

Teaching to study and teaching to read. Teaching the child to read thoughtfully is regarded by many as one of the chief activities of the teacher in the elementary grades. The fact that the past experience of the race is recorded in books and that to be learned means to be able to acquaint oneself with what the world has thought and done, gives considerable support to this view. The work type of reading and study are practically synonymous in meaning in schools as they are organized today. Skilled teachers of

reading can go far toward teaching the child to study; but it is obviously the work of every teacher to help develop those attitudes, informations, skills, and habits which are essential to a thinking person in a changing world.

Objectives or aims. The aim or objective of the teacher in teaching the child to study is to enable him to work independently. As well as having him become acquainted with facts, she is interested in developing permanent habits and interests. She has in mind something more important than immediate knowledge or information. The child must learn to work for himself. He must become independent in thought and able to carry himself forward, enlarging his understanding of the world as he goes. She is definitely trying to develop certain attitudes, informations, skills, and habits that are necessary in effective mental work. These are very complex but among the most important are the following:

1. *Attitudes and Interests*
   a. Liking for study activities
   b. Interest in a particular field of activity
2. *Information*
   a. How to carry on study effectively
   b. How to locate and use study materials
   c. How to improve ability to study
   d. Familiarity with a given field of study
3. *Skills or Abilities*
   a. Ability to read informational material quickly and accurately
   b. Ability to observe, listen, and gain experience directly
   c. Ability to communicate ideas in talking and writing
   d. Ability to think, to associate ideas, compare, evaluate, infer, draw conclusions, and apply them to new situations
   e. Ability to engage in constructive or creative activities, to plan, organize, execute, and carry out new projects of varied kinds

4. *Habits*
    a. The habit of work
    b. Thoughtfulness
    c. The reading habit
    d. Social coöperation
    e. Worthy use of leisure time

These attitudes, informations, abilities, and habits constitute the peculiar objectives of the teacher in teaching how to study. They are the outcomes. In achieving these outcomes experiences of various kinds are employed. The child should enjoy rich contacts with all types of human achievement—literature, art, music, history, science—the whole gamut of human life, in so far as it is possible for him to do so in his stage of development, in ever broadening circles.

The elementary school teacher must not lose sight of these larger aims in her preoccupation with the skills. She must not only teach the child to read, write, and manipulate numbers but she must teach him to do these things for definite purposes. History is not merely a subject to be studied but a way of life. Children must be taught in a rich environment of activities that have meaning for them. The *way of the child* in achieving a grasp of the meaning of life must be studied; yet the teacher must at all times have an observing eye for the permanent attitudes, informations, skills, and habits that enable the child to study in the true sense. The aim of teaching how to study is to direct the child toward independent methods of purposeful mental work. To allow the child to succeed or fail without assuming responsibility for either success or failure is to shirk one of the most important responsibilities of the teacher.

The use of subject matter in directed study. The use of subject matter in teaching children how to study is as

inevitable as the use of paint in the creation of a picture. Subject matter is experience. Some regard subject matter as consisting of the organized experience of the race as found in books; others insist that subject matter is any kind of experience that may be used in the education of the child. The subject of history as organized in textbooks is one kind of subject matter; but the experience of children in the study of history constitutes the subject matter of that subject also. To limit the child's subject matter to books alone is obviously impossible; yet it is necessary to think of subject matter as organized bodies of information such as are found in history, geography, arithmetic, and the like. The teacher is confronted with the problem of how to use these bodies of organized information in teaching the child how to study.

Directing the study of history. Subject matter may be thought of as one of the types of material to be used in teaching the child to study. He must learn how to read and study the material of history. Textbooks in history constitute an outline of the subject. Merely to read and memorize these outlines will not teach the child how to study the subject. He must learn how to read, organize, assimilate, and use this body of material in getting a better understanding of life and, in the process, he should come to have a permanent interest in the reading or study of history and to have his life made better for it. It is precisely this matter of teaching him to read, assimilate, organize, and use the subject matter of history that teaching him to study history involves.

Now it is obvious that teaching the child to read in a general way, involving some contact with history, may give him an introduction to the study of the subject; but if he does become a student of history without any direct attempt

on the part of the teacher of history to increase his ability to study history profitably, it will be a matter of transfer of training rather than a specific attempt on the part of the teacher to improve his study of history. It is becoming increasingly clear, then, that the teacher of a subject must not only teach the subject matter of that subject, but she must teach the child how to study the subject as well.

Teaching to study through reading. Teaching the child to study theoretically may be done independently of any specific subject matter in a separate setting with selections of material from various subjects. This has been attempted in the elementary school by means of the so-called "work-type" reader. In connection with this material the child is taught to read, comprehend, organize, and remember the important facts of history, geography, and elementary science. This is a very worth-while procedure, but it must go further. The teacher of history must carry on and teach the child to develop his ability to read and study history as he grows in maturity. Diagnostic and remedial work will be constantly necessary. It is dangerous for the teacher of history to take it for granted that the child can study the subject effectively without special training.

The use of factual material. The type of material most necessary in teaching the child to study is factual or informational material. If materials of this sort have been written by a great literary artist so much the better. Children's books of an informational character must, however, be written by the current generation of historians, geographers, and scientists, however well or ill they may write. The material should be as well written as possible, should be well organized and meaningful; but if it lacks something in the way of art, that cannot be helped. Current writings will constitute a large part of the reading and study of people who live in a

growing world. This material should be so written that helps are to be found for the teacher in teaching children how to study it. It should be interesting, detailed, well illustrated and well indexed and should contain study questions and exercises. Many recent textbooks have been organized on the unit plan, with suggestions and helps for study much more plentiful than have appeared in books of this kind previously.

The workbook, now become so common, is an attempt on the part of authors to help the teacher teach the children how to study a subject. Some of these books are admirable; others are poorly organized, uninteresting, and not especially helpful. The temptation, to the teacher with a workbook, is to stop teaching the child how to study and to depend upon the workbook to do the job for her.

In order to study effectively the child must have a textbook, dictionary, other general reference books, and more detailed and interesting special reference books on a wide variety of subjects. Moreover, he must be taught how to use these books economically and effectively.

Arousing interest. The problem of getting children interested in activities involving study is not different from getting their interest in other types of activities in which study may not be involved. It may be thought, at first, that study of a more serious type is foreign to the nature of the child and that it ought to be deferred until maturity is reached. This is far from true. Observation of children at work will show that they are capable of taking a great deal of interest in the reading type of study, in searching through books and magazines for data, in organizing reports, in participating in discussions, and in organizing and carrying through activities which necessitate a great deal of hard mental work. The main difficulty in getting children to study

books is to make such study seem worth while and profitable to them. The modern school does this by engaging them in unit studies or projects, definite purposeful activities which involve the reading and assimilation of books for their successful completion.

The more difficult matter of interesting a child in his own study abilities and habits is probably best accomplished by revealing to him his weaknesses and showing him how to overcome them. If a child finds that he cannot readily comprehend printed material useful to him in his work and the teacher will show him how he can improve, he will, ordinarily, make strenuous efforts to improve. It is only when he is asked to do things without seeing any value in them that he will fail to make an effort. In the middle grades and the junior high school, the child will begin to take an interest in his own study habits and make an effort to improve them. But even in the primary grades the teacher must begin to develop the attitudes, informations, habits, and skills essential in effective study. As soon as children begin to show an interest in effective ways of accomplishing study tasks, the teacher may take up directly the problem of learning how to study with them.

Directing study through the assignment. The assignment of lessons has a most important bearing on directed study, whether the school is an old type or a new type school, whether instruction is formal or informal. In the assignment the teacher teaches how to study quite as definitely as she teaches it directly through study exercises. Good assignments go far to prevent unnecessary floundering on the part of the child and make study interesting and worth while.

Home study needs to be even more carefully assigned than study under the teacher's immediate supervision. Such

work should not be primarily hard, driving preparation, or drill, but rather supplementary enrichment of the work begun in class. A common mistake of teachers is to make poor assignments for home study and then, knowingly or not, depend upon parents to do the necessary teaching to make study possible. The development of a new process or the introduction of a child to a new skill is poorly done in home-study assignments. Many parents rightly complain that the teacher hears the lessons which they teach.

Differentiated assignments are a great aid to directed study because they discriminate between children who are bright, average, or slow. In practice, however, teachers seldom make sufficient discrimination between the fast and the slow to enable the latter to work successfully. In Cleveland, where they have been experimenting with differentiated material for slow, average, and fast groups, they have found that the bright child is generally given work too easy and the slow child given work too hard for him to do. By experiments in differentiating the kind as well as the amount of work to be done by each of the three groups, they have found it possible in arithmetic, for instance, to have their slow groups exceed the average achievement of children in the country at large. This will come about generally when teachers learn that in differentiated assignments, differentiations must be in kind as well as in amount.

Working out a pattern of study by pre-studying material in class is an excellent way of preparing for success in study. The assignment may often be profitably engaged with this type of activity, particularly at the beginning of the study of a subject or when some new process or unit is being introduced.

Recitation and discussion. The recitation or discussion period may be used profitably for teaching a child how to

study new material as well as for the discussion of material which he has studied. When a study lesson is the order of the day, the teacher should attempt to get study under way profitably. She may do this by discussion in which the gaps in the children's information appear; she may have found that they have been having difficulty in outlining, summarizing, locating materials, finding the answers to questions, etc. In this period, ordinarily assigned to recitation, she may then conduct a study lesson, initiate the study of new material, give practice in improving ability to study, or study with the children, showing them how to proceed.

Study is generally initiated in a social setting. Class discussion and group planning and purposing are the beginning of an interest in a new project. The teacher may talk, question the children, start and encourage a discussion, or raise problems with pupils to stir their interest in some new type of activity. When doing this, the old kind of recitation will necessarily disappear and the new recitation will be a socialized reporting, discussion, and planning period. Ordinarily, teaching how to study will be incidental or, at the most, occupy only a part of a discussion period, although at times it may be the basic activity of the day.

Although the teacher gives incidentally much information to children about how to study, special periods are needed for teaching the use of the table of contents, the index, note-taking, how to memorize, the making of an outline, how to summarize, the planning of a report, and the like. Such information should be given when children have found a need for it. Skill is developed by efficient practice.

Appraising results and diagnosing errors. To measure the study habits of a pupil and to find out what he can and cannot do offers a challenge to the teacher that is seldom met. As yet there are very few tests which diagnose ability

to study in any satisfactory fashion. Informal diagnoses may be made, however, by the use of a check list, such as that devised by Yoakam.[1] Informally, too, the teacher may study each child individually, learn what he can and cannot do and determine progress or lack of progress. Reading tests of the work type, such as the Sangren-Woody [2] Reading Test, will reveal basic weakness in ability to read material, such as is commonly used in study, and indicate needed remedial work. In a like manner, tests of the subject matter of history, geography, and the like which involve comprehension rather than remembrance, may be used to discover the inabilities of children and form the basis for remedial work. The results of general achievement tests are seldom analyzed sufficiently to make the results useful for this purpose.

In the absence of a battery of tests, the teacher will find it profitable to study with children with book open. She will be able to discover the source of a great many of their difficulties and to give them remedial instruction which will produce immediate effects as a result of such work. To assign a lesson in which children prepare for an objective test and take the test with the book open may be said to be a test in how to study and may furnish the teacher with a great deal of information about the pupils' study habits and abilities.

The assignment of a paper at the end of the study of a unit of work is often a good means of testing the pupils' ability to organize the material which they have studied and to use it in a constructive way. A careful reading of such papers may tell the teacher more about the abilities of her pupils, their inconsistencies in thinking, and their power

[1] YOAKAM, G. A.—*Reading and Study*. Macmillan, 1928, pp. 461–72.

[2] SANGREN, PAUL V., and WOODY, CLIFFORD.—*Sangren-Woody Reading Test*. World Book.

to organize and express ideas than she could learn in any other way.

The types of tests which are administered at the end of a unit will do much to dictate how children will study the succeeding units. If the teacher asks mainly for facts, children will memorize facts. If the tests are plentifully interspersed with questions demanding organization of thought and solving of problems, an entirely different kind of study activity will be encouraged. The teacher should make sure that her tests of how to study are not merely tests of ability to memorize facts.

Educational outcomes. The educational outcomes of teaching how to study are the attainments of attitudes, informations, and skills, and the development of study habits. The achievement of pupils in mastering subject matter are dependent upon these factors. In the section on aims in this chapter, major objectives were set up. These constitute the outcomes of how to study.

Summary. *Directed study* is study done under carefully planned and controlled conditions. The teacher assumes a responsibility for teaching the child to study and concerns herself with the development of effective study attitudes, informations, skills, and habits. In directed study the teacher attempts to make her pupils independent workers. The modern teacher is quite as much concerned with study habits as with training the child in subject matter and in developing skill, for she teaches him how to study by the use of subject matter, and she helps him to achieve skill in order that he may study.

STUDY QUESTIONS

1. How has the responsibility of the teacher changed with respect to directing the study activities of children within the past two decades?

2. What is directed study?

3. What is supervised study?

4. What is the relation between *directed study, directed learning,* and *directing learning?*

5. What organized plans for directing study are now well known?

6. What is the peculiar task of the elementary school in teaching how to study? Of the secondary school? Of the college?

7. What does teaching to study involve?

8. What does teaching to read have to do with teaching how to study?

9. What objectives or aims may be present in a lesson in which the teacher is attempting to teach children how to study?

10. What subject matter is involved in teaching how to study?

11. How may the child be motivated to learn to study effectively?

12. What is the relation of the assignment to teaching how to study?

13. What recitation activities may occur in a lesson on how to study?

14. How may the teacher evaluate her efforts in teaching children how to study?

15. What are the educational outcomes of lessons on how to study?

16. How much incidental teaching of how to study will the teacher ordinarily do?

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CHAPTER VII

The Socialized Recitation or Discussion

Introduction. A changing aspect of teaching in the past few years has been the disappearance from approved practices of the recitation, once so general, in which the children *recited* and the teacher *heard* their recitations, questioned them, marked them, and made running suggestions and corrections. The socialized recitation has been a natural outgrowth of the use of the project method, activities, and the disposition to direct children in natural ways and to give them the opportunity of reporting, discussing, and listening to one another. In this chapter, an effort will be made to provide a thorough treatment of the principles involved in the management of a socialized recitation or discussion period.

The teacher a director of activities. A classroom is socialized when a friendly spirit of coöperative work prevails. It is non-socialized when the teacher is the chief actor and when the children recite only when called upon. There are several factors which contribute to the socialized spirit. Perhaps the one greatest factor is the teacher's personality and her attitude toward children and teaching. In a socialized recitation the teacher is a member of the group and exercises leadership but keeps authority in abeyance. She tries to be a coöperative director and participator and to avoid giving the impression that she is chief actor in the classroom drama. In other words, she abandons the time-honored dictatorship for a participating membership in the group and acts as general consultant and advisor.

She does not abandon her responsibility for teaching, but exercises that responsibility in a different way, by suggestion rather than by command.

Importance of the setting. It is important that the proper social setting be arranged for a socialized recitation. Certain forms common to the traditional classroom are abandoned and others are set up in their place. The children assume greater responsibility and more leadership. A child is often chairman of the group and the amenities of socialized living become more prominent. But the most important thing of all is a changed spirit of coöperative work and play which gives each child a share of responsibility for the welfare of the group and which respects the personality of each child. Naturally, as children gain in ability to manage themselves the teacher exercises less obvious control and teaches through indirect rather than direct means more and more. The essentials of a proper social setting vary with different classrooms in detail but the fundamental considerations are the establishment of a feeling of mutual confidence and respect among all members of the group, an abeyance of the military spirit, a chance for each member to speak freely and to contribute to the group activity, the observance of the ordinary conventions of polite intercourse, and the abandonment of formalism—of question-and-answer activities of the older type.

Pupil-participation is thus increased as much as possible and teacher-participation of the older type is reduced to a minimum. Children are discussing, questioning, reporting, planning, working, in natural ways. The teacher is guide, counselor, advisor, contributor, and director in the best sense of the word, trying to get children to discover things for themselves rather than to have them merely

listening to her and trying to commit words to memory. Emphasis upon verbal memorization is at a minimum.

New knowledge needed by the teacher. The teacher must familiarize herself with the social experiences of her pupils outside of school, for these have a great deal to do with the success of an enterprise. Some pupils will be coöperative because they come from homes where the friendly group spirit exists. Others will not understand the new spirit because of familiarity with a life where it does not obtain and will be slow to adjust themselves. Still others will be positively anti-social in their attitudes. These different types of social attitudes must be known to the teacher and she must manage so as to utilize the coöperative spirit of the few until she is able to develop it among all the members of the group. This will not be difficult to do if she genuinely desires to develop children socially and makes them feel that the activities of her class are to be conducted in a true spirit of coöperative living together.

New forms of class organization not essential. The form of the class organization is believed by some to have a marked effect on socialized activities. Therefore some schools change the form of organization and adopt a scheme of procedure based upon parliamentary law, electing a chairman and enforcing the usual rules of procedure. This seems scarcely more advantageous than the older form of recitation, unless the barriers of self-consciousness can be broken down. A true socialized activity does not require a change in form but rather a change in spirit. Small informal groups, rotating chairman, committee work, and informal discussion, as well as formal meetings, are helpful in developing the socialized spirit. Too formal organization will tend to inhibit the pupils and defeat the purpose of the teacher.

The teacher's personality and the socialized recitation. The teacher's personality is obviously an important factor in socialized group activity. She must be essentially a coöperative being. It will be hard for a driving military martinet to disguise her real belief in and love for authority of the older type under a smooth and self-effacing manner. First of all, the teacher must be genuine in her desire to develop the social consciousness of her pupils; and second, she must strive to be kindly, sympathetic, respectful of the pupils' personalities, even-tempered, patient, but withal strong and persistent. She must exemplify in her personality the coöperative spirit.

Effect of classroom arrangement. Classrooms equipped in the regular manner with long rows of seats and the usual teacher's desk prominently displayed in front of the room may work against the socialized spirit. Some schools are now breaking up this formal arrangment for a more informal one, with small groups of seats arranged together, or with tables and chairs instead of the traditional desks and with the teacher's desk to the side or in the rear. The new equipment is doubtless a help, but even with a formal classroom arrangement the socialized spirit may prevail. It is the spirit of the class rather than the form of the classroom or its equipment which is important. The form of the socialized recitation is a matter of secondary importance. Forms are merely convenient ways of behaving which people have adopted in order to work effectively and economically. It is the spirit of the teacher and the pupils which creates a socialized recitation or discussion.

Changed attitudes and the socialized recitation. The pupil's attitude in a socialized recitation is not an instinctively defensive one as in the traditional recitation. He has learned that he really is a member of a coöperative working

group. The teacher has shown by her manner that she is genuinely desirous of giving him an opportunity to be free and independent so long as his activities are directed toward the welfare of the group. He is commended for good work by both the teacher and his fellow pupils and, if he is normal, he soon learns that he is a partner in a worthwhile coöperative enterprise.

The friendly group attitude is more easily obtained by the socialized procedure than by the traditional type of recitation because a marked contrast is obvious in the teacher's attitude, in the purposes set up, in the amount of teacher participation, and in the sincere spirit of working together which characterize the new way of doing things.

Objectives or aims of socialized class work. The one important aim of the socialized recitation is to produce a greater amount of activity on the part of the pupils and to train them to live, to work, and to play together in a friendly coöperative way. In doing this, it is necessary that the pupils as well as the teacher constitute the audience, that pupils teach one another to a considerable extent, that they learn to give and take, and that they develop a sense of responsibility for the welfare of the group. This method tends to improve the individualistic attitude of the strong and to develop the powers of the weak or docile child. The reduction in the amount of formality which characterizes the traditional recitation tends to establish a friendlier feeling between teacher and pupils and to encourage naturally diffident pupils to become more self-confident. It also encourages the spirit of play as well as of work, since it utilizes the children's coöperative tendency and allows them freedom in planning, in gathering information, in reporting, and in discussion as well as in other ways. The value of utilizing the natural interests of children in activity cannot

be overestimated. By this method the bluffer is brought to light and shown up by his own peers and the instinct to show off is often developed into the desire to do real service to the group. Subject matter becomes useful material to be used in achieving certain desirable ends. All in all, the socialized recitation affords an opportunity for the observation of the principles of *learning through doing* which recent developments in psychology seem to make so desirable.

Organization of the socialized recitation. The organization of the socialized recitation or discussion period necessarily differs somewhat from that of the traditional recitation. Its chief distinction is, as has been stated in a previous section, a change in spirit rather than a change in form, although the form of organization in most child-centered schools is somewhat different from that in the traditional school. It is not necessary, however, to change the type of school organization to socialize instruction. In fact, the writers have seen as fine types of socialized recitation in formally organized schools as in experimental and child-centered schools.

Types of organization. The different types of organization for socialized teaching and learning may be characterized as the informal group plan, the institutionalized group plan, the self-directing group plan, and the seminar group plan. The least effective of all is the conventional group plan with its high degree of centralization of authority and activity in the teacher and the ordinary question-and-answer activity of the pupil.

1. *The informal group plan.* The informal group plan is one which has been effectively used by teachers and consists in a change in attitude and spirit rather than a radical change in class organization. The center of gravity is in the activity. Children and teacher discuss their problems

and projects informally. They work together. The teacher may be the leader, a child for a time may assume leadership, or a group of children may be in the center of things. Teacher and children understand that the play's the thing and that everyone is free to challenge, ask for explanations, volunteer information, be called upon to report findings, be asked to undertake a special investigation for the good of all, and otherwise act as a worker or player in the group enterprise. The teacher is leader because she is recognized as able to lead and is, because of her maturity and training, better able to lead than the children. In such a scheme there are no formal leaders, committees, or programs except when such formal occasions are demanded for the entertainment of others. The work and play spirit prevails in a natural and normal way.

2. *The institutionalized group plan.* The institutionalized group plan is an imitation of adult forms of institutional organization. The class may be organized as a city council, a court, a club, a senate, or as a business or professional organization of some kind. This plan requires the election or appointment of officers, the keeping of records, and other features of formal institutional organization. Theoretically it teaches pupils how to take part in institutional life and prepares them for the duties of citizenship. It gives an opportunity for children to learn leadership. Adversely, it may engender stereotyped forms of activity and may encourage the few able pupils to develop their powers without giving the less able an opportunity to grow. The plan requires a great deal of wise management on the part of the teacher. She must see that all the children have a chance to assume leadership; she must train the group in the proper functions of each member and teach the form of organization appropriate to the activity. The plan seems best for

certain types of training in more or less formal group activities in the upper grades and high school. The organization of a civics class as a court, council, or legislative body may seem appropriate for a limited time. Formal institutional organizations must be changed often or they will become monotonous and non-effective.

3. *The self-directing group plan.* The self-directing group plan is only a slightly different type of socialized organization from the informal group plan. The responsibility of the pupils for the activities of the class is somewhat greater. Pupil committees are given more responsibility. The teacher may serve to a greater degree as a referee in case of dispute and as a less prominent adviser and counselor than in the informal group plan. The difference is, however, more a matter of degree than of kind. It would seem that the self-directing group plan would be more appropriate for the upper grades, high school, college, and university than for the primary school. The great advantage of such an organization is that it constantly emphasizes the duty of responsibility and that it gives children ever-increasing opportunities for the exercise of initiative and independence. Through participation in the actual planning and carrying out of activities many believe the child will derive more permanent value than from any amount of activity directed by the teacher in which he does not have a coöperative part.

4. *The seminar group plan.* The seminar group plan has generally been characteristic of advanced classes in the college or university. There has been some use of the idea, however, in the elementary and secondary school. Each individual in the seminar group either takes part in the carrying out of a separate individual investigation or assumes a share of a larger project. He works individually, or in a small group, largely under his own direction. Periodic

reports and discussions are held. The peculiar characteristic of the seminar is generally the critical evaluation of the work of the individual members by the group in conference. The teacher is the leader of the seminar but the work of the group consists largely of the reports of the studies made by the individual members or of small coöperating groups. There is a true socialized spirit—planning, organizing, collecting, reporting, discussion, and evaluation. The members of the group are recognized as co-workers, their rights and opinions are respected, and the appreciation of their fellows is the main reward aside from the satisfaction of the work itself. This type of socialized group is appropriate for the upper grades, high school, and college. To a certain extent it may be used in the middle grades.

Advantages and disadvantages. In all the forms of organization discussed in this section there is apparent a trend away from teacher activity and dictation toward pupil activity and self-direction. The obvious value of socialized activity may be seen in two directions: (1) it gives the child training in socialized living; and (2) it makes work and play pleasurable because it gives each member of the group a share in the responsibility. The disadvantages of socialized recitation activity lie in its misuse by a teacher who does not understand it fully. Children may waste time, organization may be non-effective, and the social spirit may be artificial and unreal. In the hands of a good teacher, however, the advantages inherent in organization of some form of socialized recitation seem to far outweigh any possible disadvantages.

Teacher and pupil activities. Incidentally, in the previous sections, much has been said or implied concerning the activities of both teacher and pupils in a socialized organization for instruction. Nevertheless, at this time it seems neces-

sary to indicate systematically in a general way the activities appropriate to each.

1. *The teacher's activities.* The teacher's activities in a socialized recitation begin long before the recitation begins. As the leader of the group, she is responsible for its progress. She is also responsible for the development of the fundamental attitudes, interests, ideals, information, skills, and habits necessary for successful participation in socialized activities and constituting the outcomes of the children's contact with the school in all its aspects. For this reason, she must see far ahead and plan wisely in order that the progress of children may be certain and that they may quickly learn how to work and play together. Her previous training and experience with children make her familiar with their nature and their needs, and so she has a definite plan of procedure for their activities. Yet she does not desire to impose this plan upon them without their understanding and coöperation. Therefore she plans a series of situations in which the need for coöperative activity will arise and she has, in general, an idea of what is going to happen. She knows that her approach to these situations must be made carefully, that she must gain the confidence and the coöperation of the children, that her attitude toward them is an important factor, that she must appear as a friendly and interested person with many suggestions for interesting activities that the children will like. At the same time, she must not lose sight of her responsibility as a teacher for planning sufficient practice in skills and for organizing the activity so that important bodies of subject matter are met and used in the furtherance of the activity. To these ends, she plans her series of activities most carefully and organizes her materials so that children are sure to have a profitable experience.

When the time for the socialized discussion or work period comes, the teacher is ready to act as guide, counselor, suggestor, contributor, evaluator, and director. She tries to get children to plan and organize, to initiate activity. She is patient with their mistakes and does not hurry them but watches carefully for the signs of difficulty and tries to get them to solve their own problems if possible. However, she does not hesitate when necessary to criticise and suggest, to disapprove and to set them on the right track. In all this, she refrains from dominating the situation and seeks to get the pupils to take ever-increasing responsibility. She keeps her hands off the situation when it is going satisfactorily and tries to make the children increasingly active while she assumes less and less of the responsibility for leadership. Watchfully she encourages every sign of independent thinking, every suggestion of growing power in initiative and independence. Her fundamental objective is to further the growth of children through their own efforts.

Nevertheless, while the foregoing discussion is in all essential aspects true, there is no suggestion that the teacher shall not be an important contributor and participant in the work of the group. To withdraw entirely from the activities of the group would be unwise and a distinct shirking of responsibility. The teacher as a working member of the group will naturally make her contribution whenever it seems opportune. Children will look naturally to her for guidance, criticism, contribution, and suggestions. It is only the thoughtless who imagine a school running by itself with the teachers away on a vacation. Even adult society does not run without its presidents, legislatures, courts, and officers of the law. How much less possible for classes to run without teachers, the managing directors and the chief contributors to the socialized activities of children!

2. *The pupils' activities.* The activities of children in socialized situations are implied in the description of teachers' activities. As members of socialized, coöperating groups it is the part of children to be participators, contributors, evaluators, suggestors, and planners. Since the set-up is designed for their benefit, the more they have to do with the activity the better. In a socialized situation the pupils are the actors, the audience, and the critics of their own performance. Besides, they are in the way of being authors, managers, stage hands, orchestra, ushers, and ticket sellers. There is nothing in which they may not and should not have a part. They plan, organize, collect, report, and evaluate the work of others. They are responsible for the success of the enterprise as coöperative agents.

A typical socialized recitation finds the teacher and pupils together ready to discuss a problem, plan some future activity, report the results of investigations, evaluate what has been done, and suggest what needs to be done to carry to a completion the activity already begun. The teacher may be the leader and ask for reports of work done. The children may be called upon by the teacher or may volunteer to report. Each child is given the floor in turn. He reports what he has done. The class sits in judgment as well as in appreciation. Pupils ask him questions. They criticise his results. He answers their criticisms. The teacher questions him and even defends him if she thinks the class criticism unjust or too severe. After all pupils have reported, the teacher opens discussion. Tentative conclusions are made. New problems arise. New duties are assumed by the individual members of the group. The teacher makes suggestions. Materials are obtained and the group goes to work to carry on the project further. Each has had a part in the activity. Hard work has been done but, withal, in a fine humor.

An additional step has been made in learning how to work together.

Outcomes. The outcomes of the socialized recitation and discussion as well as of socialized work and play should not be hard to enumerate. Since the obvious purpose of such a procedure is to give pupils an opportunity to learn how to work together the following outcomes logically ensue:

1. Pupils learn to plan activities.
2. Common interests and purposes are discovered.
3. Practice in leadership is gained.
4. Initiative is encouraged.
5. Independence of thought is achieved.
6. Training in courtesy is given.
7. Ability to report is developed.
8. Pupils learn how to take part in discussion.
9. Practice is had in passing judgment.
10. Extensive experience is possible.
11. Self-confidence is gained.
12. Respect for others is developed.
13. Coöperation is learned.
14. Teachers know pupils better.
15. Pupils have greater admiration and respect for teachers.
16. Learning is more highly motivated.

These are some of the outcomes of socialized procedure. There are doubtless many concomitant learnings which have not been enumerated. It is to be noted that these outcomes are the outgrowth of socialized experience. A different type of situation would produce an entirely different set of outcomes; but since part of life at least is coöperation with one's fellows, it is highly important that the school should seek to create situations in which the art of living together is learned. The socialized recitation is not only good fun but it is good education.

Appraising results. The evaluation of a socialized procedure of any kind may be made on the basis of a set of

criteria as supplied by a useful check-list, such as that furnished in the accompanying workbook, *Directed Study and Observation of Teaching*. Evaluation is possible by several methods: (1) subjective evaluation of an offhand nature; (2) more objective evaluation with a check-list and a set of standards; (3) measurement by formal or informal tests; and (4) experimental measurement. The latter is the true test of the worth of socialized procedures. Do the children learn more as a result of socialized recitations than by the traditional procedure? Teachers are urged to evaluate in terms of their own informal tests as well as by the use of check-lists. Offhand judgment is not very reliable. The following set of points is suggested as a very general outline for the evaluation of a socialized recitation.

Brief Check-List for Evaluation of a Socialized Recitation
(Check correct answer)

	YES	NO
I. *Purpose*		
1. Was the purpose of the recitation made clear?	———	———
II. *Teacher Activity*		
1. Did the teacher direct activity without dominating it?	———	———
2. Did the teacher make a contribution to the recitation?	———	———
3. Did the teacher make suggestions for improvement?	———	———
4. Did the teacher succeed in making the activity general (*i.e.*, did all pupils participate)?	———	———
5. Did the teacher stimulate the children to further activity?	———	———
6. Did the teacher succeed in directing the activity into profitable channels without using harsh methods?	———	———

III. *Pupils' Activities*

1. Did pupils assume responsibility for the recitation?	____	____
2. Were they effective in presentation and discussion?	____	____
3. Did they evaluate results intelligently?	____	____
4. Were they appreciative of good work?	____	____
5. Did they receive criticism in a friendly spirit?	____	____
6. Did they show signs of enjoyment?	____	____
7. Did they show initiative in thought or action?	____	____
8. Did they show independence of thought or action?	____	____
9. Did they make progress in the recitation?	____	____
10. Did they make suggestions for future activity?	____	____

IV. *Outcomes*

1. Did the pupils gain new information?	____	____
2. Did they make some advance in skill?	____	____
3. Did they consistently assume the coöperative attitude?	____	____
4. Did they gain new knowledge?	____	____
5. Did they make progress in learning how to work together?	____	____

A predominance of checks in the "Yes" column means a good recitation. A little practice with even this rather brief form of check-list will enable the student teacher to become a good judge of a socialized recitation and the use of the check-list by the experienced teacher will enable her to evaluate her own procedures.

STUDY QUESTIONS

1. What are the chief objections to the traditional type of recitation?

2. What definition of the socialized recitation seems most effective to you?

3. When is a classroom socialized?
4. What is the effect of the teacher's personality on the socialized recitation?
5. What type of social situation must prevail in a socialized classroom?
6. How does the teacher teach in a socialized recitation?
7. What information about the social situation outside the school must the teacher possess?
8. What is the relation between the participation of teacher and pupil in the socialized recitation?
9. Describe the effect of form of class organization on the socialized recitation.
10. Is it necessary to change the seating in the classroom?
11. What is the probable effect of informal grouping of the pupils?
12. What are the chief objectives of the socialized procedure?
13. What types of organization are possible in the socialized recitation?
14. Evaluate each of the suggested forms.
15. Describe the teacher's activities in an ideal form of the socialized recitation.
16. Describe the pupils' activities in some detail.
17. Outline in a general way the sequence of activities in an ideal socialized recitation or discussion.
18. Discuss the outcomes of the socialized recitation as outlined in this chapter.
19. Discuss the problem of evaluation of socialized procedure.

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CHAPTER VIII

Diagnosis

Introduction. The diagnosis of learning difficulties is a comparatively new type of activity in the modern schoolroom. It represents an attempt on the part of progressive teachers to increase the effectiveness of their methods of teaching. The modern teacher is no longer satisfied with hit-or-miss methods of doing things. She desires to be a specialist, as well as a general practitioner. Hunches and guesses are not effective means of disclosing weaknesses and deficiencies in learning. More accurate devices are necessary for diagnostic purposes than for mere observation. As a result of their dissatisfaction with inexpert teaching, many of the more progressive teachers are beginning to employ objective means of finding out wherein children have their specific learning difficulties. To what extent diagnosis can be effectively engaged in by teachers, and how it is to function in the classroom, is a problem of great importance. It will be the purpose of this chapter to give the reader at least a general approach to this important problem.

Definition and development of diagnosis. Diagnosis is the art or act of recognizing a difficulty by its symptoms. It is an explanation of the difficulty based on an examination of the facts. It may be scientific or unscientific. It is scientific if the explanation is based on facts determined by careful examination of the case with the aid of mechanical instruments or skilled observation. In the medical profession, practitioners usually make their diagnoses with the aid of mechanical devices, such as stethoscopes, thermometers,

X-ray machines, etc.; in dentistry the same practice occurs; in engineering the defective aspects of materials are determined through testing; in mechanics, physicists employ galvanometers, barometers, voltmeters, etc., to obtain facts desired for any purpose. Likewise, in many other fields of study, the skilled expert employs some kind of a mechanical device to assist in making a complete diagnosis of difficulty. To the extent that facts are disclosed in an orderly and objective manner, the diagnosis is scientific.

Its specific use in teaching. In recent years the practice of diagnosis has spread to teaching, in which it represents the act of discovering and recognizing pupils' learning difficulties from the symptoms which are discoverable in one form or another in class work. Often the symptoms are apparent from observation, but more often they cannot be discovered until careful measurements are made for diagnostic purposes. In whatever manner the symptoms disclose themselves, they serve as indicators of the source of trouble or difficulty. When difficulties are identified a proper means must be employed to reveal the exact nature of the ailment. The diagnostic test is the instrument developed by educational scientists for the purpose of locating difficulties and, if possible, revealing their causes. The attitude formerly held that general methods of instruction were adequate to reveal learning difficulties is in ill repute among the more advanced thinkers in the field of educational practice. The modern point of view holds that the teacher should be a diagnostician of learning difficulties and a doctor able to cure them. She must find out the difficulties which children experience in their school work and proceed to correct them by specific forms of activity.

Many of the recent studies of learning show that there are at least two types of difficulties to be recognized by

teachers; namely, those due to the inherent complexity of subject matter and its lack of suitability to the learner, and those due to ineffective methods of work which are remediable. An illustration of the former type is the nature and extent of the vocabulary and the complex modes of thought encountered in reading the printed page. An illustration of the latter type is the tendency of children to confuse meanings of words and terms and their failure to distinguish between essential and non-essential statements when attempting to interpret the meaning of printed pages reasonably adjusted to their abilities.

The purpose of diagnostic teaching. The function of diagnostic teaching is twofold. First, it should reveal the inherent difficulties which subject matter itself presents to the learner and, second, the specific difficulty he has in mastering it. If the difficulty is inherent in the subject matter, the emphasis in teaching will be on reconstructing and adjusting materials to the learner's level. If, on the other hand, the difficulty is inherent in the learner's habits of study or in his ability to grasp a situation readily, the emphasis in teaching will be on building up effective habits of work through practice exercises involving perception, recognition, general comprehension, and other mental functions.

An example of subject matter difficulty is to be found in such spelling words as "separate" and "believe," while an example of learning difficulty in mastering these words would be the confusing of the alternatives "er" and "ar"; and "ei" and "ie"; or the tendency to be careless in the matter of properly visualizing the sequence of letters in a word. Diagnostic analysis, including testing, should aid the teacher in detecting such errors in a more objective way than does unsystematic observation.

The subject fields of diagnostic teaching. Diagnostic teaching is usually limited to the tool subjects: arithmetic, grammar, reading, spelling, and writing. This is chiefly due to the fact that these subjects, as taught, involve relatively simple types of learning which exhibit the phenomena of stimulus and response more clearly than more complex situations where the use of these skills is merely instrumental in developing intricate reactions. These fundamental subjects constitute tool subjects which condition one's advancement in gaining other knowledge. In this sense, they are regarded as the most important subjects of the elementary school curriculum, and the ones which are most difficult for the learner to acquire in his beginning school days. However, it is probable that the social studies are much more complex and in the last analysis more important. The latter, however, are more difficult to analyze, but that should not prevent effort at analysis. Teachers are beginning to realize this fact and are taking a greater interest in diagnosing children's difficulties in learning history, geography, etc. It is probable that the teacher will find as many children having difficulty with interpretation in the content subjects as she will find having difficulty with the mechanics of the tool subjects. Often, however, if the learner has difficulty in the content subjects, it is due, in part, to the fact that he has not mastered the skill or tool subjects. As a rule, children seem not to have as great a difficulty in mastering the social and natural sciences as they have in mastering the mechanics of the tool subjects; but this may be due to the difficulty of recognizing their deficiencies. It is generally rightly recognized that skill and comprehension in reading are basic to the understanding of the printed page wherever it is found—in geography, history, or science. This has brought about an effort to improve reading in these subjects. It must be

recognized, however, that the latter subjects may contain special technical vocabularies, charts, diagrams, graphs, statistical tables, and many types of complex thinking which constitute peculiar problems, the mastery of which involves many serious difficulties which require expert study.

The method of diagnosis in a general way is fairly well worked out for a number of tool subjects, such as arithmetic, reading, spelling, and writing. It is believed that within the next few years methods of diagnosis will be extended to include more subjects of the elementary school curriculum, and that standardized tests of a purely diagnostic nature will appear in larger numbers. While there are many tests now on the market, they are not usually good instruments for diagnostic analysis. Their main purpose seems to be that of testing progress in achieving knowledge rather than specific analysis of abilities and skills. The teaching profession sorely needs more adequate diagnostic measuring devices in all subjects, both in the tools of learning and in the content subjects. The complex nature of learning is just beginning to be appreciated. Until more adequate analyses of learning in various situations are made known, such tests cannot be devised.

Arousing interest in diagnostic teaching. Any form of instruction which aims to discover pupils' learning difficulties tends to have a positive effect in motivating school work. Since the attack of the learner is centered on those phases of materials and those special abilities which constitute the chief barrier to success, effort to overcome these weaknesses becomes more purposeful. While learning should not merely be a matter of attention to difficulties but should have its positive aspect of achieving other desired ends, there is a heartening effect that comes from expert direction that expedites learning. Difficulty is perplexing and, if prolonged,

tends to produce inaction in the learner. Diagnosis tends to reveal difficulties due to poor methods of work and hence to free the learner for effective pursuit of a constructive project. It is so logical to remove difficulties before one attempts to go forward that skilled diagnostic teaching motivates itself. Beyond this, interest in the subject or activity must be motivated by the inherent values which the learner finds in it.

The assignment in diagnostic teaching. The assignment in this particular form of teaching often may be largely an individual matter. Ordinarily it should not be made for out-of-class study until it involves learning something with which pupils have been made familiar or about which they know exactly what is to be done through the diagnosis which has been made. In general, diagnostic teaching must first take place in the classroom under the teacher's direction, but following such exercises assignments for independent work may very properly be made. The assignment may consist of written materials containing mistakes which pupils may profitably check out of class to find their errors. In fact, they should be given a great deal of practice, in and out of class, in detecting their own inaccuracies, but it is necessary for the teacher to make a careful check on all such work. Follow-up work is also important. While pupils should be taught as early as possible in their school career to detect their own errors, they should not, however, be allowed to carry on the practice indefinitely unless the work is followed up closely by the teacher to make certain that some improvement is apparent. Assignments, therefore, are best when they consist in individual attempts on the part of pupils to eliminate some definite error through practice. Practice exercises in organized form are often excellent for this purpose.

Class activities. Diagnostic teaching, as at present practiced, involves a number of activities including individual study of the student under laboratory conditions, the use of the case-study technique, general observation and a study of the student's activities, general observation of a class, or the administration and use of tests of various kinds. All of these activities may be appropriate for either the study period or the recitation. In fact, under such a plan of teaching, recitation as such generally disappears and gives way to work periods in which the teacher is making observations and asking questions or in measuring, diagnosing, and directing pupils in making their own diagnoses.

While case-study, involving the administration of individual intelligence tests, performance tests, and other psychological tests is theoretically possible, the average teacher has neither the time nor the training for this kind of diagnostic work but will have to devote her time to group diagnoses which may be made by the use of either formal or informal tests or analytical check-lists of various kinds. The technique of the teacher in a period devoted to such work will then have to do with the administration, correction, and analysis of a test which is useful for this work.

The use of tests in diagnosis. Tests vary in their usefulness. The oldest type of test of this character which might lend itself to diagnostic use is the traditional essay examination. By the use of an analytical chart of somewhat the following type the teacher might make a useful diagnostic study of such examination.

Pupil's name	*Content*	*Organization*	*Originality*	*Mechanics*
John Doe	Brief	Poor	None	Spelling
Mary Smith	Adequate	Excellent	Several examples	Adequate

Such a chart could be greatly extended and varied in accordance with the subject. The analysis must have been made by the teacher previous to the recitation. The recitation might consist of illustration and explanation of the various weaknesses exhibited in the papers. Better descriptive words denominating the deficiency will also be discovered by the teacher.

The standardized test, originated as a substitute for the written examination, may be adapted for diagnostic purposes. Some few are diagnostic in a broad way. Certain tests, such as Charter's *Diagnostic Language Tests* and the *Compass Diagnostic Tests in Arithmetic,* are valuable instruments for measuring those deficiencies which are more or less common among all children in certain phases of these subjects. Even these tests, however, are practically useless in revealing the specific difficulty which a pupil may be experiencing in the classroom with nouns and pronouns and with the arithmetic skills of local social value. Such tests have their limitations in improving instruction and learning conditions among children. An illustration of a rather common form of a diagnostic test is given here to show the limitations of such a test in diagnosing specific learning difficulties.

A Diagnostic Language Test [1]

Directions. If a sentence is correct, place the letter "C" in the blank after it; if it is wrong, place the letter "W" in the blank after it. Study the sample.

Sample

1. Such studies as this are valuable W
2. Such studies as these are valuable C

[1] The content of this test was determined by B. W. DeBusk in a study of the *Persistence of Language Errors among School Children.* University of Oregon, 1930.

1. I wouldn't do that if I was you. . . . . ——
2. I wouldn't do that if I were you. . . . . ——
3. Jane has gone without her lunch. . . . . ——
4. Jane has went without her lunch. . . . . ——
5. He hadn't ought to be late. . . . . ——
6. He ought not to be late ——
7. Me and you can do that . . . . ——
8. You and I can do that ——
9. Put the pencils into the box. . . . . ——
10. Put the pencils in the box. . . . . ——
11. You were the one the teacher called. . . . . . . ——
12. You was the one the teacher called. . . . . . . ——
13. Have the robins went South yet?. . . . . ——
14. Have the robins gone South yet?. . . . . ——
15. The two boys was sent to the office. . . . . ——
16. The two boys were sent to the office. . . . ——
17. The packages come in the mail. . . . . ——
18. The packages came in the mail. . . . . ——
19. Each one sat in his seat ——
20. Each one sat in their seat. . . . . ——
21. Where was the books, Mary?. . . . . ——
22. Where were the books, Mary?. . . . . ——
23. He hurt himself. . . . . ——
24. He hurt hisself. . . . . . ——
25. She gave me her book ——
26. She give me her book ——
27. I haven't no paper. . ——
28. I haven't any paper. ——
29. Give me those papers ——
30. Give me them papers ——
31. I borrowed the pen of Henry. . . . . ——
32. I borrowed the pen off of Henry. . . . . ——
33. Yes, I saw her Thursday. . . . . ——
34. Yes, I seen her Thursday. . . . . ——
35. Lay down, Rex. . . . . . ——
36. Lie down, Rex. . . . . . ——
37. I haven't got no book ——
38. I have no book. . . . . . ——
39. Those girls are good friends. . . . . ——
40. Them girls are good friends. . . . . ——
41. Who saw the show last night?. . . . . ——
42. Who seen the show last night?. . . . . ——
43. Mary's cat lays near the door. . . . . ——
44. Mary's cat lies near the door. . . . . ——
45. This is a secret between you and me. . . ——
46. This is a secret between you and I. . . . ——

47. That is him coming now. . . . . ——
48. That is he coming now ——
49. Have you saw my papers?. . . . . ——
50. Have you seen my papers?. . . . . ——
51. Jane likes Betty and I ——
52. Jane likes Betty and me. . . . . ——
53. This here is the prettiest. . . . . ——
54. This is the prettiest. . ——
55. I did my best. . . . . . . ——
56. I done my best. . . . . . ——
57. It was her that you saw. . . . . ——
58. It was she that you saw. . . . . ——
59. He did his arithmetic at home. . . . . ——
60. He done his arithmetic at home. . . . . ——
61. Please set in this chair ——
62. Please sit in this chair ——
63. It was he that ran. . . ——
64. It was him that ran. . ——
65. Whom did this come from?. . . . . ——
66. Who did this come from?. . . . . ——
67. She had done it wrong again. . . . . ——
68. She had did it wrong again. . . . . ——
69. It don't matter what you did. . . . . ——
70. It doesn't matter what you did. . . . . ——
71. Her and him were at the show. . . . . ——
72. She and he were at the show. . . . . ——
73. I like these kind of pears. . . . . ——
74. I like this kind of pears. . . . . ——
75. There are enough books. . . . . ——
76. There is enough books ——
77. He taught me to skate ——
78. He learned me to skate ——
79. He and I heard the speech. . . . . ——
80. Him and I heard the speech. . . . . ——
81. Mary and Jane are here. . . . . ——
82. Mary and Jane is here ——
83. He threw the ball to me. . . . . ——
84. He throwed the ball to me. . . . . ——
85. Had she gone when you came?. . . . . ——
86. Had she went when you came?. . . . . ——
87. We ran to the lake. . . ——
88. We run to the lake. . . ——
89. We boys will go for you. . . . . ——
90. Us boys will go for you ——
91. She looks like she were ill. . . . . ——
92. She looks as if she were ill. . . . . ——
93. Wait for we boys. . . . ——
94. Wait for us boys. . . . ——

95. The boy writes good. ——
96. The boy writes well.. ——
97. Please let me drive the car................ ——
98. Please leave me drive the car............. ——
99. I have ate dinner.... ——
100. I have eaten dinner.. ——

It will be noted that this test is composed of 50 different items, each of which is intended to reveal a different language error commonly made by pupils in the elementary school. The test is general in its diagnosis. In order to be specific, each of the 50 items which represents a type error would have to be expanded into a single test dealing with just those errors of a particular type.

The teacher's use of this test for diagnosis is therefore limited by the adequacy of the test. The informal objective test which is given below is much more specific than the one above but it may not be specific enough to be a good diagnostic test unless the language errors which it contains are found in the unit of material for class work.

A Diagnostic Language Test

Directions. Each of the sentences in this test contains two words in parentheses, one of which makes a sentence correct. Write the word which makes the sentence correct in the blank space after it.

Sample

1. The boy (fell, falled) off the porch. fell

1. John said the pony (did, done) as it was told 1. ____________
2. He (run, ran) nearly a city block......... 2. ____________
3. They (seen, saw) the boat race........... 3. ____________
4. She (sat, set) the vase on the stand....... 4. ____________
5. The children (burst, busted) their toy balloons.............................. 5. ____________
6. The janitor (rang, ringed) the bell at nine o'clock........................... 6. ____________
7. The pupil (knowed, knew) he was right... 7. ____________

8. His record was (broken, broke) only once before today.......................... 8. ______
9. They have (went, gone) already......... 9. ______
10. The life guard (dived, dove) into the pool. 10. ______
11. The boy (drank, drunk) too much pop.... 11. ______
12. They (drawed, drew) lots to see who would do the work.......................... 12. ______
13. The picnickers (et, ate) their lunch in the grove.............................. 13. ______
14. He (drived, drove) nails in the plank for sport.............................. 14. ______
15. The boy (swam, swimmed) across the lake 15. ______
16. He (set, sat) there for almost two hours... 16. ______
17. The injured man (lay, laid) on the ground several hours before he was found........ 17. ______
18. He (wrote, writed) a letter to his friend... 18. ______
19. The pond was (froze, frozen) over about a month earlier this winter than last...... 19. ______
20. She said she was happy now because she was (rid, ridden) of all her enemies........... 20. ______
21. He said he (came, come) only as a spectator 21. ______
22. They (threw, throwed) baseballs into kegs 22. ______
23. The teacher wanted to know how he had (tore, torn) his coat.................... 23. ______
24. He said the loud noise (awaked, awakened) him last night........................ 24. ______
25. Tabby (set, sat) watching the mouse..... 25. ______
26. He asked if we ever (rode, rided) a roller coaster............................. 26. ______
27. He had (rang, rung) the bell louder today than usual.......................... 27. ______
28. No one had (saw, seen) him for many years 28. ______
29. They (ridded, rid) the ground of rubbish.. 29. ______
30. The boys (took, taked) their baseball mitts with them.......................... 30. ______
31. He said he (laid, lay) the sweater on the bench............................ 31. ______
32. He (breaked, broke) his previous record in swimming.......................... 32. ______

This test is more specific than the other, because its items are limited to particular verb forms—the tenses of verbs. It would be more specific if its elements were limited to the inflections of a single verb. However, such a test is neither practical nor necessary, for the reason that many verbs have their principal parts formed in a regular way. It is always more desirable and satisfactory to include in a test as many items as is consistent with good testing practice. The greater the number of items, the easier it will be to get a good distribution of performance on a test.

Such tests as the preceding may be used frequently in the skill subjects for discovering the weaknesses of pupils. To be most effective they should be simple in language and should be practically self-corrective. The arrangement of the preceding tests is good. Either teacher or pupil could score the tests and a list of the errors made could easily be determined. For the sake of economy, it is well to train children to score their own tests and to make, in so far as possible, their own diagnoses. Those tests which are objective in character, that is which permit the pupil to underline, cross out, or match items, are better than those which require a great deal of writing and which present difficulties in determining the right answers.

Another form of diagnostic activity which is somewhat related to the use of standardized or informal tests is that suggested in modern textbooks of which the *Horn-Ashbaugh Speller* is a typical example. This plan is often referred to as the test-study-test method and is extensively employed in the more progressive school systems throughout the country. But a plan of diagnosing which the teacher will find most practical in disclosing weaknesses in learning is that of devising informal objective tests, such as the preceding samples illustrate. The advantage of this practice

is that the teacher can adapt the test to the particular unit of material under consideration in class. Regardless of the nature of the subject matter being taught, the practice of making tests and materials correlate will be found most effective for diagnostic purposes. Some knowledge of test construction will be necessary. Usually, the procedure to follow in this connection is to determine the function which the test is to serve. Then analyze the materials of the given unit for the purpose of finding out what kind of exercises can most readily be made from them. If the materials are suitable for a matching test, organize and construct a matching test. If they are not, then try some other form of an objective test,[1] such as a multiple-response, alternate-response, identification, or enumeration test. After the testing exercises are made out in longhand, they should be typewritten for the purpose of making duplicate copies with the hectograph or mimeograph. When sufficient copies are printed, the test may be administered and checked as any standardized test. The length of exercises, time limits, and other conditions of the test may vary according to the purposes for which it is to be employed.

The use of check-lists. Analysis by check-lists which involves general observation and checking of behavior, such as the Gray *Oral Reading Test,* is another form of diagnostic teaching which may properly consume time formerly devoted to recitation. The check-list may be made up by the teacher or borrowed from those already prepared by experts. An example of such a check-list in *Reading and Study* has already been referred to. Zirbes in the *Twenty-Fourth Yearbook* of the National Society for the Study of Education gives an excellent analytical chart. The procedure is for the teacher to engage children in some activity and then

[1] See Chapter XII, *Tests and Examinations.*

by observation to check the errors in their responses. This is particularly useful in oral language and in other types of overt response. See the check-lists in *Directed Study and Observation of Teaching* for examples of semi-objective check-lists for various purposes.

The various activities of diagnosis suggested in this section are only a few of the many diagnostic activities which may be undertaken by the intelligent teacher. She must always keep in mind that one of the main objectives of diagnostic teaching is to train pupils to diagnose and correct their own weaknesses. Independence in diagnosing and overcoming weaknesses is necessary for effective work as well as play.

The results of diagnostic teaching. It is doubtful whether any teaching activity serves so definitely to establish fundamental habits of work and study as diagnostic teaching does. It makes pupils conscious of their weaknesses and of the necessity of being on the alert for their mistakes. It represents a scientific way to go about uncovering incorrect forms of study activity. Wrong tendencies to action are revealed as soon as symptoms of them appear in classroom work. Diagnostic teaching reduces the number of special problem cases to a minimum, prevents the development of ineffective habits of work, and, at the same time, develops a wholesome attitude among pupils toward their school work. If the practice of diagnosis is carried on specifically, it will do much toward saving pupils from the effects of protracted wrong reactions and the development of habits which may deter progress.

Summary. Diagnostic teaching is "detective" teaching in the sense that it aims to discover wherein pupils are having their chief difficulty in learning. If the difficulty is inherent in the subject matter, a careful diagnosis should

disclose those phases of the unit in which pupils are having their trouble. If, on the other hand, the difficulty is due to the errors of children in learning the subject matter, a careful diagnosis should reveal their difficulties and prepare the way for overcoming them. Whenever possible, observation should be supplemented by the use of objective instruments in making the diagnosis. Hunches and guesses concerning pupils' deficiencies are not safe to follow seriously. Neither are preconceived notions. Symptoms of weaknesses will reveal points of departure. They should be carefully followed up by the use of some form of an objective test. Informal objective tests should be devised by the teacher and adapted to the specific purpose for which she believes they will best function in disclosing the learning difficulty. Standardized tests may be employed to check on general deficiencies, such as lack of ability to comprehend and slowness in speed of reaction, but they are not usually effective instruments to employ unless they are based on the specific unit under consideration by the pupil or the class. Standardized tests of various kinds and types are valuable, however, for suggestions in constructing informal objective tests. The teacher should use them with a great deal of discretion for diagnostic purposes. Since diagnostic work will be largely an individual matter with each pupil, it is recommended that the teacher construct her own informal tests for checking on individual weaknesses in learning. In addition the use of the techniques of testing before teaching and of observation controlled by adequate check-lists is advised.

STUDY QUESTIONS

1. What is the general meaning of diagnosis?
2. What is the educational meaning of the term?
3. Why should the teacher be an expert diagnostician?

4. What are the symptoms of weaknesses which may be disclosed by pupils in learning?

5. What is the value of heeding symptoms of weaknesses in the pupil's learning?

6. What is the difference between diagnostic and remedial teaching?

7. Why is it important that pupils be taught to detect their own weaknesses in learning early in their school careers?

8. Why will it be necessary, in most instances, for the teacher to make her own objective tests for diagnostic purposes?

9. What are the limitations of standardized tests in diagnosing learning difficulties?

10. Why is it important that diagnostic tests and materials for study correlate?

11. What are several types of ready-made materials which may be employed for diagnostic purposes?

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CHAPTER IX

Remedial Teaching

Introduction. Remedial teaching logically follows diagnostic teaching. In fact, the two types are normally aspects of a unified process in which the teacher is attempting to discover and remedy the errors in learning which children commonly make. Some lessons are solely diagnostic in character; some are entirely remedial. Generally, however, they are intermixed in such a manner that it is impossible to separate them except for purposes of analysis and discussion as in this chapter. Since remedial techniques are comparatively new, it is necessary that the student of teaching give special consideration to the subject.

Remedial teaching defined. Remedial teaching is actually old, since good teachers from time immemorial have always tried to correct the errors in children's learning and set them on the right track. The new remedial teaching has received a stimulus from the testing movement, however, and has been given a name borrowed from the medical profession. It has for its purpose the development of effective techniques for the correction of errors in all types of learning. As yet, it has been more effectively used in the skill subjects than in the social studies. This is probably because the errors in learning may be more easily detected in the former than in the latter.

Remedial teaching tries to be specific and exact; it attempts to find a procedure which will cause the child to correct his errors of skill or thought. It aims to correct errors of the past and thus, in a sense, prevent future errors. It

is not always successful but under favorable conditions, as in spelling, arithmetic, and reading, some unusual results have been achieved. The reports of Gates [1] and of Gray [2] on remedial work in reading are suggestive of a type of teaching which in the future may remedy the causes of failure and make possible educational progress by pupils who would otherwise be educational casualties.

Methods used in remedial teaching. Remedial teaching is carried on in several different ways: (1) incidentally, as in the past; (2) by the case-study method in which individual pupils are segregated for treatment; (3) by systematic treatment of errors before a whole group after diagnosis; (4) by the group-individual method through the use of practice materials administered to the group but designed for treatment of individual differences. The effort of the teacher is to find ways and means of applying remedies for errors of all sorts. In spelling, for instance, observation of the work of pupils may reveal that they are not following a systematic method of study. Remedial work may consist in instructing them in a better method and having them practice the method under the teacher's supervision until it is learned. In geography, tests or observation may reveal that the pupils are unable to interpret maps accurately, are deficient in vocabulary and ability to read and assimilate geographical material, and have certain wrong geographical concepts. The teacher will use different remedial treatment for each of these errors. Training in map reading will repair the difficulty first mentioned; special attention to vocabulary, practice in reading paragraphs under careful control, and additional teaching of the concepts that are wrongly understood will result in improvement in the pupils' ability to study the

[1] GATES, ARTHUR I.—*The Improvement of Reading.* Macmillan, 1927.

[2] GRAY, W. S.—*Remedial Cases in Reading: Their Diagnosis and Treatment.* University of Chicago Press, 1922.

subject. In all kinds of teaching situations necessity for remedial work will often arise.

The uses of remedial teaching. Theoretically, the function of remedial teaching is to cure some educational ill. If there are no errors of teaching and learning, there is no need of remedial teaching. Ideally, errors in learning should be prevented and the need for remedial teaching should lessen as teaching becomes more expert. In a sense, the attitude necessary to remedial teaching is that of seeking for cures for ills that ought not to have happened. Just as in the medical profession more emphasis is now being placed on preventive medicine, so in teaching there should be increasing emphasis upon teaching so well that error seldom occurs. But as long as human error persists, remedial teaching will be necessary.

The function of remedial teaching is to recondition habit and skill, to correct errors in knowledge, and to substitute good attitudes, interests, and ideals for undesirable ones. In doing this it must treat each ailment specifically. It can no more succeed in every instance, however, than can medicine. Blind repetition of a learning exercise is not remedial teaching. The pupil must recognize errors, see the reason for a different type of performance, and set his will to the right reaction if he is to succeed. Often, then, the problem of remedial teaching is one of changing attitudes, removing prejudices, and restoring confidence and morale as well as one of devising good practice exercises and other types of remedial exercises for the removal of the difficulty experienced by the pupil. The most wasteful of all remedial teaching is blind, unintelligent drill.

There are errors due to the faulty learning of pupils and errors due to the lack of effectiveness of the teaching material. Educational scientists are now attempting to build

drill material that will prevent errors in learning. On this point Knight [1] says,

> It is not at present known what errors are due to genuine learning difficulties and what errors are due to faulty construction of drill. It is probable that much need for remedial work lies not in giving pupils more drill but in giving them better drill from the start. If errors are due to wrong experiences and lack of experiences in systematic drill, then the main drive upon remedial work should be upon reconstruction of drill work from the start.

There is every reason for thinking that it is wrong to be so careless in teaching and drill work that pupils constantly learn wrong facts and develop errors in skill. Remedial work is rightly laying emphasis upon more expert teaching through more expertly made materials.

Remedial teaching possible in many fields. The subject matter of remedial teaching may consist of material taken from any subject. It is more likely to be found at present, however, in reading, arithmetic, language, spelling, and writing than in history, geography, science, or other content subject. There is every reason for thinking, however, that more effort should be made to discover and remedy errors in all types of teaching and learning. A suggestive outline of the subject matter of remedial teaching in the different school subjects follows:

A Few Typical Examples of Subject Matter in Which Remedial Work Is Often Found Necessary

Examples from the Tool Subjects

1. Arithmetic
   a. Carrying numbers in division
   b. Estimating quotient figures

[1] KNIGHT, F. B.—*Third Yearbook*, Department of Superintendence, p. 90.

2. Grammar
   a. Using the correct forms of verbs that agree with subjects in number
   b. Making the pronoun agree with the antecedent in number
3. Reading
   a. Increasing the recognition span
   b. Correcting irregular eye movements
4. Spelling
   a. Learning to spell words ending in "able" and "ible"
   b. Developing a spelling conscience
5. Penmanship
   a. Getting the correct slant of letters
   b. Spacing letters and words properly

Examples from the Content Subjects

1. Elementary Science
   a. Correcting superstitions, fallacies, and prejudices about nature, such as persecuting and destroying toads, harmless snakes, bats, etc.
2. Geography
   a. Learning map locations
3. History
   a. Learning the cause of the Westward movement and its effects on our national life
   b. Learning methods of settling disputes
4. Hygiene
   a. Caring properly for the teeth
   b. Protecting one's self against harmful bacteria

This list represents just a sample of the nature of subject matter in which remedial work is commonly needed. The list could be extended indefinitely. An analysis of this list of examples will show that not all material which the pupil studies in the content subjects is of the drill type. Much of it will involve thought difficulties, such as comprehending cause-and-effect relationships, following a series of events in history through a certain period, integrating the various political phases of the rule of a given party or dy-

nasty, and the like. Unit activities in history, in science, and in the other content subjects may, and often do, require considerable remedial work. In fact, wherever diagnostic work is engaged in, remedial work will be necessary. The one activity naturally follows or precedes the other.

Securing a good mental set. The motivation of remedial work depends largely upon getting pupils to assume an active mental set toward the activity. A positive and active set toward the removal or correction of a deficiency in learning is often created by a careful study of the results of tests, such as making individual and group charts, tables, and graphs. This practice enables children to compare their progress with that of the class as a unit or with one another's. Interest in the activity follows, in most instances, for children become alert and conscious of the need for remedial work. It is not always an easy matter to make children aware of needed improvement, but this is the crucial point in motivating the activity. It prevents the overlearning of already known facts or skills. Too much repetition of familiar and known facts tends to deaden enthusiasm for school work. A challenge is necessary to enliven interest. Personal difficulties in learning are challenges if they are on the pupil's level; merely doing the same thing over and over again is deadening. One writer [1] believes that repeating an activity which has already been done correctly does more positive harm than good to the learner. In commenting on the waste of indiscriminate drill, he says:

> The repeating of work done correctly does positive harm if continued. No self-respecting pupil of even third-grade judgment can have much respect or loyalty to a drill service which calls for the same treatment of correct work that it does for incorrect work, namely, to do it over.

[1] KNIGHT, F. B.—*Op. cit.*, p. 89.

The practice of needlessly repeating work once done correctly over and over again is without doubt the greatest single factor in causing school work to become drudgery, and it is often the primary source of many disciplinary problems in the school.

Independent study. Assignments in remedial work may consist of practicing a needed reaction, as in drill, organizing and reorganizing some difficult aspect of a problem or project in history, or finding and trying out numerous remedies to recondition and correct some fault in language or writing. In any case, detailed assignments to be followed must be discussed and explained in class before remedial work is assigned for out-of-class study. It is often necessary to provide good practice exercises of various sorts to be used as a means of correcting errors in knowledge or in skill. The work of the pupil must consist of faithful attempts to correct the errors which have been discovered in his work. Doubtless many failures in learning are due to poor textbooks and the old-fashioned textbook assignment. Methods of assignment are, however, becoming more definite and more skilled and the result should be that, in the future, the amount of remedial work will be materially lessened. Little, if any, remedial work should be done lone-handed by pupils, unless they are aware of effective remedies and how to apply them successfully. Trial-and-success or -failure application of remedies by pupils is often wasteful and in the final analysis may do more harm than good.

Conducting class activities. The pupils' recitation activity in remedial work consists largely of learning what remedy or treatment is most effective and how it is to be applied in a given situation. Generally speaking, this is the case irrespective of the type of material which is being

treated. In the content subjects, remedial activity is confined mostly to selecting the proper sort of treatment for correcting errors in thought or action. In the skill subjects, remedial work is chiefly drill or systematic practice under guidance. The practice of selecting the proper remedy or treatment and applying it effectively is an important pupil activity in the recitation.

The teacher's chief concern in remedial work is to assist pupils in selecting the most effective treatment that is possible and to guide them in their initial stages of applying it. When using drill as a remedy or treatment, the teacher should be interested in reconstructing practice to meet the ever-increasing need experienced by pupils in their difficulties. This makes possible a flexible type of remedial treatment and greatly aids in correcting those errors that tend to persist after pupils have had practice in one or more remedial measures. Gray [1] gives a list of the most frequently used types of remedial treatment in reading. Examples of these are suggested here for study.

Pupil Difficulties	Remedial Suggestions
1. Limited span of recognition	1. Give phrase drill made up in the form of flash-card exercises
2. Limited ability to recognize words	2. Give training in phonetics, word pronunciation, learning rules for pronunciation
3. Lack of accuracy in word recognition	3. Give word drills in content and flash-card exercises
4. Failure to interpret with any degree of accuracy the printed page	4. Give practice in distinguishing thought units, reading to find answers to questions, and exercises in following directions

[1] GRAY, W. S.—*Op. cit.*, pp. 33–36.

The foregoing activities are concerned with remedial treatment in reading. A rather complete chart for guidance in diagnostic and remedial work in reading can be found on pages 277 to 287 inclusive, in the *Twenty-Fourth Yearbook*, Part I, of the National Society for the Study of Education. A sample of the analysis of diagnostic and remedial work suggested in this yearbook is given below.

Evidences of Deficiency	Diagnosis	Remedial Suggestions
Numerous requests for help on simple and common words in oral and silent reading.	Failure to accumulate sight vocabulary as a by-product of reading experience. Insufficient training in sight words.	Provide methods of self-help. Hold pupils responsible for listing words on which they requested help and use the words as a basis of one drill.
Unable to read anything but simple material, but cares only for material beyond his own reading ability.	Ability to read stunted as a result of being read to too much. Interests and tastes developed and satisfied with no responsibility for growth in ability to read.	Read part of a story, stopping to let pupil read on to see how the story comes out. Condition further reading on completion of the story.

It will be noted that this sample includes diagnostic work as well as remedial practice. It is difficult to separate the two activities in teaching, nor is separation necessary except for the purpose of preventing confusion in the mind of the reader. Diagnostic and remedial practice go hand-in-hand in corrective teaching, although at times a teaching period may deal wholly with one or the other activity.

The use of tests in remedial work. Tests are an essential part of remedial work. They are necessary in checking the effectiveness of the remedy and its application by the pupil. Otherwise, it would be impossible to know which treatment was the most satisfactory one to employ in any given instance or situation. Standardized tests are not effective for remedial purposes. They are too general in character and, besides, they are not usually based on the particular unit of work in which pupils are interested and engaged. It is necessary for the teacher to devise her own tests for remedial work. These should be short objective tests dealing with the materials under consideration in the classroom. It is important that these teacher-made objective tests cover the difficulties involved in learning the unit.

Outcomes of remedial teaching. The significance of remedial work is realized by pupils when they can select the proper remedy or treatment for the special difficulty and apply it effectively. Just as in medicine the outcome of treatment is a cure, so in remedial teaching the pupil must experience a definite change in knowledge, skill, and habit. He must definitely experience improvement. Remedial treatment of handwriting difficulties must result in better handwriting. Language errors must be corrected under instruction. Concomitant outcomes of remedial teaching are increased confidence on the pupil's part, satisfaction arising from successful achievement, and better understanding of good learning and study procedures.

Summary. A remedy is a treatment. When applied to educational practice, it means reconditioning wrong and incorrect reactions. Its chief function is to build up effective responses in the place of ineffective ones. It is a recondition-

ing process. Considered from the pupil's point of view, remedial work is primarily intended to develop ability to select suitable remedies or treatments and to apply them effectively in difficult learning situations. Considered from the teacher's view-point, remedial work is a means of assisting pupils to determine effective treatments for their experienced difficulties and of rendering careful guidance in applying these treatments. The ultimate goal of remedial teaching is to develop among pupils a certain amount of independence in selecting and applying the different remedies to their personal difficulties. This ability is made possible only through constant practice in choosing and applying the remedies for difficulties which they experience from time to time in their work. In the tool subjects, the remedy or treatment is largely drill, while in the content subjects it is chiefly a matter of organizing and reorganizing materials, methods of attacking materials, and methods of thinking. Although some drill is undoubtedly necessary even in the content subjects, the effectiveness of remedial work depends, in no small measure, upon increased understanding of the subject. Drill is often made effective when it is reconstructed. Likewise, methods of thinking, procedures in study, and the use of materials in study are also more effective when they are made over in their essential aspects. A remedy is effective only to the extent that it can be modified to meet the ever-increasing needs experienced by children in their more difficult phases of school work.

STUDY QUESTIONS

1. Whence is the term *remedy* derived?
2. What is its medical meaning?
3. What are examples of remedies in school work?
4. What is the chief function of remedial work in school?

5. What is meant by reconditioning undesirable reactions? Illustrate.

6. Why is drill often considered the only remedy for all educational ailments?

7. On what phases of drill does Knight believe remedial work should be centered?

8. Why is remedial work not usually extended to include the content subjects of the curriculum?

9. What is the value of reconstructing practice exercises, problems, and projects in remedial work?

10. Why is merely going over and over again the same thing devoid of challenge?

11. What kind of remedial work may pupils do out of class?

12. What will be the chief difference between remedial work in the tool subjects and the content subjects?

13. What are several typical examples of subject matter or materials in which remedial work is often found necessary?

14. What are several good references dealing with remedial work in school?

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CHAPTER X

DRILL

Introduction. Drill is one of the most widely used procedures in teaching. Its popularity among teachers is unquestionably due to the ease with which it can be applied. To many teachers, it is mere repetition of an act to attain perfection in a performance, irrespective of the needs and interests of children and the goal and standards of school achievement. This conception of drill is one of the chief causes for the many abuses and misuses of it in teaching facts, habits, and skills. Experimental practice furnishes objective evidence of the ineffectiveness of the drill procedure as formerly employed. This evidence has been helpful in many ways, but scientific research has not been entirely successful in devising materials and methods for effective administration of drill instruction so that it may be uniformly effective. Nor has it, as yet, adequately assembled the results of studies for classroom use. Nevertheless, much progress has been made in understanding the drill process and developing new principles governing its use by the classroom teacher.

The nature and necessity of drill in teaching and learning. Drill is a serious work activity which has for its purpose the perfection of a skill or the strengthening of associations to make them more permanent. A synonym for the term is *practice*. Psychologists have found that the phenomenon of learning is quickly followed by the phenomenon of forgetting. The major characteristics of the curves of each have been plotted. If permanence in learning is desired, ordinarily practice is required. Ebbinghaus experimented with

the learning of nonsense syllables in order to discover how many repetitions were necessary before he could repeat a series of meaningless syllables without effort. Meumann and others experimented with meaningful material for the same purpose. Out of these and later experiments, gradually emerged the so-called laws of learning. The laws of set, exercise, and effect are the major laws that govern learnings of various kinds.

The practical experience of teachers has also taught them that in learning such things as tables in arithmetic, dates in history, facts in geography, skill in handwriting, vocabulary in reading, and skill in drawing, gymnastics, and games, practice is necessary. There have resulted many devices and methods of drill and practice designated to make these learnings successful and permanent. Often, however, teachers have placed their main reliance upon the second of these laws; namely, the law of exercise, and have ignored the others to the everlasting harm of teaching and learning. Effective drill is economical drill or drill carried on with understanding, interest, and a realization that the specific exercises practiced are the ones the learner needs. Progress is necessary, and the learner must have assurance that he is making progress. An illustration may be drawn from any game the reader prefers. Let us choose golf. This is a game requiring a high degree of motor coördination and skill. The learner must not only practice but he must practice with understanding and with a clear idea of his objective if he is to make any progress. Thousands of poor players whang a ball about for years without improving their ability to play golf in the least. This is because their practice is without understanding and direction. Let them, however, come into contact with a good teacher of golf. He analyzes their problems with them, sets up some fundamental

principles, and starts them to practice on the fundamentals of the golf swing. They begin to get some understanding; they begin to practice with a definite purpose and upon those fundamental elements that constitute a good golf swing. In a few weeks or months, instead of being like a Civil War veteran out in 61 and back in 64, they begin to shoot an effective game. Gradually they improve more and more and in a few months or a year they are intelligent golfers. Practice, when necessary, centers on faults that need to be corrected. They are so successful in their game that they get greatly increased enjoyment from it. So it is with learning other things. A child practices blindly on the forty-five addition combinations. Without intelligent action on the part of his teacher, he practices just as much on combinations he knows as on the combinations he does not know. His practice is unintelligent, non-purposeful, and wasteful. Such practice is bad and defeats the very purpose for which it is used. Skilled direction by the teacher, however, soon discovers the combinations causing difficulty. These are singled out. Intelligent practice follows and results become satisfying.

How drill may become effective. Drill should be intelligent and purposeful. The learner should understand just what it is that he is to learn, how he is to go about it, and how to correct errors when they appear. He should be in possession of a method of discovering his specific errors. He should have access to organized materials which help him diagnose difficulties and furnish him with economical and effective practice exercises. It is only in this way that he can save time and avoid needless effort. The only good drill is intelligent, individualized drill. Concert drills, so characteristic of the older school, are almost indefensible in modern practice.

Recent studies have shown that drill is most effective when it is on the whole process rather than on isolated elements, and when it is concentrated on what is not known rather than what is already mastered. No amount of repetition of the isolated parts of a golf swing will make a good golfer. All the elements in the swing must be practiced together and it is only when stance, grip, back-swing, down-swing, and follow-through are all coördinated properly that the results are satisfactory. Knight,[1] in a study of the drill process in arithmetic, thus summarizes the principles governing the good organization of drill:

1. Drill should be on the entire process, since evidence from scientific studies does not show how many times any given number of combinations should be practiced.
2. Drill should be given frequently and in small amounts.
3. A drill unit should be mixed drill and should include all processes studied.
4. Drill should have time limits.
5. Drill should have accuracy standards, considering three factors:
   a. It should be generous enough to allow more than half the class to finish the drill in the given time.
   b. The rating should be given in terms of the number of examples finished correctly in a given amount of time.
   c. Emphasis should be on the correction of specific errors and wrong work, rather than on the repetition of correct work.

Common neglect of the laws of set and effect is an equally serious defect due to ignorance on the part of the teacher of the nature of the drill activities. Teachers can and do succeed, after a long time, in causing children to learn certain facts and skills by dint of unending drill. They do not realize that if care were taken to arouse an intelligent appreciation of the need for practice and the value of the skill

[1] KNIGHT, F. B.—*Third Yearbook,* Department of Superintendence, pp. 63–64.

or facts to be learned, so much practice would not be necessary. They are also unaware of the fact that constant failure, lack of progress, and inability to use the skill or facts intelligently are also responsible for ineffective results in drill. Good drill is intelligent, strongly motivated, and effective practice.

The purpose of drill instruction. The purpose for which drill can be thoroughly justified, then, is to fix and to maintain a skill or a learned association that has meaning and is useful to the learner. There are other procedures which can be employed more advantageously than drill in gaining understanding of facts and information. It is a misuse of drill to employ it for purposes of developing understanding of a process or an operation without giving attention to the meaning of the process as a whole. Many teachers fail to understand the real function of drill and, as a result, substitute it for other activities necessary to an understanding of the use of a skill or a fact in its natural setting. This misconception of the use of drill often arises from the fact that the teacher concentrates on the memorization of subject matter, not on its use nor on an understanding of it. It matters little, in the opinion of the teacher, how the subject matter is learned. In learning the combinations in arithmetic and in acquiring facts in history, teachers often emphasize the repetition of the facts apart from the total process and from their use and meaning, and fail to see that a fact or information will not function unless special attention is given to the purpose for which it is be acquired. Likewise, in learning the mechanics of punctuation, the spelling of common words, and dates in history, repetition is frequently given to the particular fact or item involved, without regard to the use of the fact and the attitude of the pupil toward it. This practice tends to develop the notion that drill

can be effectively employed to fix and retain facts apart from their value and use.

What has just been said should not be construed to mean that the elemental units of a large reaction or operation do not belong to the realm of drill work. It will often be found necessary to drill on these smaller units if the learner is having difficulty with them. For purposes of correcting specific errors in all types of reaction, drill plays an important rôle. In learning column addition, for instance, it may be found necessary to give specific drill on carrying, bridging the tens, and the holding of several numbers in mind as well as on the total sum of the column of numbers, but this drill should follow upon an understanding of the need for it by the learner. Drill should be reserved for the purposes of making automatic responses or reactions which have been found important in large unit activities. Facts and skills in history, processes and operations in arithmetic, principles in writing and composition, and skillful manipulation of the mechanics of language, reading, and the other fundamental subjects of the elementary school curriculum constitute the chief concern of drill in the modern sense of the word, but only in connection with an attempt to develop the larger meanings of the wholes to which these facts, skills, principles, and processes belong.

Drill and the school subjects. The subject matter which demands drill for mastery is found more or less in all school subjects, but is characteristic particularly of the tool or service subjects. Arithmetic, reading, language, handwriting, spelling, etc., as organized, contain more material for practice than any other kind. These subjects have not as yet, except in an experimental way and in one or two commercial forms, been organized as activities. At the present time, an effort is being made to make them

more natural and easy to learn, by organizing activities through which they are learned. In most schools, however, improvement in these subjects has taken place rather through trying to make them more interesting and satisfying than through intelligent practice.

Certain experimental schools have been making an attempt to reduce the drill aspects of these subjects to a minimum and to teach them through social studies. Incidental teaching is suggested by this method. Incidental practice, however, has not generally proved most successful. It seems more defensible to have a systematic practice or exercise period, or periods, for these subjects and to teach them specifically, rather than to depend upon such incidental teaching as is shown to be necessary when they are met as tools in connection with some purposeful activity. At Aliquippa, Pennsylvania, where a modified activities program is in operation, these skill subjects are practiced specifically, but a careful record is kept in the activities period of all uses of skills. Practice work is made individual and specific, and the periods devoted to reading, arithmetic, etc., are more effective because the need for practice is related directly to the use of the skills in purposeful activities of great moment to children. This seems to the writers an almost ideal way of handling the problem for the present.

The subject matter of drill, then, consists of facts, principles, and skills of particular importance to the learner which may occur in any learning situation. These abound in tool subjects where they are often taught irrespective of their use in integrated situations. Isolated drill, however, is being attacked. When tool subjects are taught as subjects, without reference to their use in projects, the results are being greatly improved through better organization of

drill materials, diagnosis, remedial exercises, and individualized practice.

Drill and the activity curriculum. As has already been suggested, success in carrying on problems, projects, and unit activities depends upon the effectiveness of drill work. It is impossible to carry on these larger activities successfully unless the operations of the tool or key subjects—arithmetic, grammar, reading, and spelling—are developed. An analysis of the tool subjects shows that mastery of much of their more difficult phases depends upon systematic drill exercises to fix habits of accuracy and speed of work. In arithmetic, there are innumerable processes and operations which come under the category of skills to be made automatic by drill. Addition, subtraction, multiplication, and division of integers and fractions should be attentively repeated at intervals by pupils until they have developed a fair degree of accuracy and speed in using them. Writing exercises should be practiced until pupils have attained the standards for speed and quality set forth in one of the standard writing scales, such as in the Ayres, Freeman, or Thorndike scale. Drill on the commonly misspelled words in sentences or even apart from sentences, in some instances, should continue until pupils have built up a spelling vocabulary of at least 4500 to 5000 words by the time they have finished the elementary school course of study. Standards of attainment for practically all the elementary tool subjects are quite scientifically determined, and comparative norms are available for checking the results obtained in these subjects. Much of this drill work should be individualized. All of it should be related, in so far as possible, to the study of other school subjects where it is to be employed.

Two ways to make drill interesting. There are two ways to motivate drill: (1) by indirect methods; *i.e.*, through

discovery of a need for it in some meaningful activity, and (2) by direct methods; *i.e.*, by specific attack on learning a skill without reference to any specific need. The former means of motivating drill is sometimes employed voluntarily when the learner finds it essential in understanding and applying a process or operation. The latter means of motivating drill is usually more common among teachers; drill is employed for its own sake; it is believed to be interesting in itself. It may be said for the latter, that if drill is properly initiated and success is made possible, interest may not be a difficult matter to maintain. "Nothing succeeds like success." This motto holds that interest follows upon success. In other words, make success possible and interest will take care of itself. Also give the learner a clear view of his goal and interest is likely to follow. The learner must know what he is attempting to do at all times. Otherwise, he will lose interest if he has it, and if he does not have it, he probably never will develop it.

The intrinsic method. This, however, does not settle the question as to what is the best way of motivating drill. On theoretical grounds, the intrinsic method appears sounder. Specific need for a skill as revealed in an activity is, or should be, a natural cause for strong interest in it. Ideally, practice should follow on a need for it, but the lack of well-organized practice will be a cause for poor results. It seems more defensible to draw ideas from both factions and to motivate drill through activities first, then to follow this by effective motivated practice.

Motivated practice. Effective practice may be insured by observing the following principles. The character of the initial practice conditions interest. If the practice exercises are relatively easy in the early stages of learning a process or operation, interest is ordinarily forthcoming. If they are

not, interest will be difficult to arouse. It is sound practice then, to begin drill work with easy exercises and gradually increase them in difficulty as general improvement is made by the group. It is also very essential that the learner know whether or not he is making progress. Frequent testing, therefore, is necessary and beneficial to subsequent practice. Making children aware of the results of achievement arouses a strong urge among pupils to improve. This can be done in several ways. If objective tests are used, the teacher may present the results of these tests in the form of a chart or graph or both, or she may teach the children to make charts and graphs of their learning progress. The latter method is more stimulating to children. Another method of motivation is to set up a miniature experiment in the classroom and try out different motivating devices for drill. Measurement of the results of different devices may show some of particular value. Book [1] showed that when the learner is aware of the results of practice, the work is much more interesting and effective. When children themselves see that certain forms of practice are highly effective, their efforts should be greatly improved.

Drill in arithmetic illustrated. A specific illustration will help to make clear how drill work in arithmetic may be motivated. Suppose the exercise of adding a column of numbers, having for its aim the ability to hold the sum of several numbers in mind, is the operation to be performed by the group. The teacher may employ any one of the following means of motivating the work: (1) gauging the exercises to the abilities of the group, making possible immediate success; (2) comparing the number of exercises added by a learner in a given length of time—say five minutes—with the average of the group for the same period of time; (3) giv-

[1] BOOK, W. F.—*Pedagogical Seminary*, Vol. XXIX, December, 1922.

ing pupils their records of the previous day's performance and having them try to excel them today; (4) putting a chart or graph on the blackboard, showing the average improvement in adding for individual members and the class from day to day; (5) having children keep an individual graph for purposes of comparison with their own previous and class performances; and (6) preparing for a contest, if there are several divisions of the same grade in the same building. These represent a few of the motivating devices which have been used by progressive teachers. It is true that many of them are extrinsic to the real use of number in life but they are at least more effective than older devices. Others may be added to the list, for it is far from being complete. There is probably no single means of motivation so strong as the one of insuring pupils an opportunity to succeed, and showing them that they have succeeded. Children, as well as adults, like to do those things in which they are successful. School work should be so organized that success is made possible.

Directing practice in drill. In drill work, if independent work is to be done by the pupil, and it must be done, either in school or out, the assignment is a particularly important matter. Time will be lost and results will be poor if teachers fail to direct the pupil adequately. He must know specifically what he is to practice, how he is to practice it, and how he can tell whether or not he is making satisfactory progress. This calls for skilled assignment. Fortunately, in some subjects, particularly in arithmetic and spelling, excellently organized materials, including drill exercises adapted to individualized instruction, are available for this purpose.

Good assignment techniques may be illustrated by drawing material from the subject of arithmetic, which is usually

considered the example, par excellence, of the tool subjects. There is probably no other elementary school subject in which drill material is any better organized. This makes it possible for the teacher to give excellent assignments if she does not leave the matter entirely to the materials and say, simply, "Take the next ten exercises or problems." Such an assignment is never defensible unless pupils have previously discussed the work involved, understand its importance, know what is to be done, and know how to do it. In the latter case, it might be justified.

If textbook examples of type problems and processes are previously illustrated or demonstrated by the teacher, or if the assignment merely consists of practicing some familiar process or operation, a general statement of what is to be done in the way of preparation for a subsequent meeting of the class may be made with justice to all concerned. However, as a rule, short assignments are usually very ineffective unless preceded or accompanied by some motivating device. In the more modern textbooks in arithmetic, these devices are plentiful. They are also to be found plentifully in practice books for seat-work. The textbooks give excellent explanations of processes. The workbooks give effectively organized specific exercises. Assignment consists then in a clear explanation of the purpose of the material. The pupils undertake to practice. Self-checking tests, graphs, charts, and rating cards make the checking of progress simple and add to the interest. The secret of making an effective assignment is learning how to set up the problem at the beginning. If the proper sort of orientation is provided in the beginning of new work, pupils will have little trouble, in general, with their preparation out of class. It is dangerous, however, to expect pupils to learn new operations from textbooks or workbooks alone, for they do too

much fumbling and waste a great deal of time and effort in trial-and-error learning. New processes should be developed with pupils in class. They should know what they are to practice and feel a need for it before being permitted to undertake an important activity unaided. Ineffective habits, once established, are difficult to eradicate.

Eight suggestions for home work. Klapper[1] gives eight suggestions to guide teachers in assigning out-of-class work. They are abbreviated here for the convenience of the reader. These principles apply generally to the drill type of learning.

1. Home work should consist of exercises which make application of what is learned in school.
2. The assignment should be made with reference to the time which children have at their disposal.
3. The difficulty of exercises in the assignment should be given careful consideration.
4. Home work should be checked in class either by the teacher or by pupils.
5. A record should be kept from day to day to show pupils, at a glance, their progress.
6. Favorable conditions for studying should be provided for in the home.
7. Home work should be gauged to the ability of the various members of the class.
8. Home work should not always be written out. Children can practice orally some exercises to an advantage.

These rules have general application. Some are more important than others. A great deal of care must be exercised by the teacher in making out-of-class assignments, for if she assigns work on new processes or operations without first giving instruction on them in class, children will have to rely on the explanations of their parents or of someone else who is not especially trained to give effective assistance.

[1] KLAPPER, PAUL B.—*The Teaching of Arithmetic*, pp. 129–32.

Class activities in drill instruction. Common recitation activities in drill work include explanations, preliminary practice, assignment of drill exercises, correction of drills, analysis of errors, discussion of difficulties, and remedial work to be undertaken to correct them. In drill work, the recitation period is ordinarily a work and conference period. However, it is becoming more and more common to use the period for supervised study and individual work.

In connection with more difficult types of learning, such as are involved in learning processes in arithmetic, considerable explanation by the teacher is necessary to make it possible for the child to understand the process. Initiating correct performance is necessary. Commonly the first attempts of the pupils to learn the process are rightly made under the personal direction of the teacher in the recitation. She demonstrates the method, shows children how to carry on a performance, and then lets them try it under her direction, observing errors and showing pupils how to correct them.

After the pupils have succeeded in understanding what is to be done and have had some preliminary practice, the teacher then assigns additional practice material. The pupils may then continue the practice under her immediate direction, or independently either at school or at home. If at school, the teacher will inspect their work from time to time to see what they are doing and how well they are doing it and to offer suggestions and help when needed.

Ultimately, an appraisal of progress, analysis of difficulties, and suggestion of remedial measures will need to be made. The recitation may at times be devoted entirely to matters of this type. Pupils will have questions that they wish to ask. The meaning and use of the process will need to be further discussed and its value further estimated.

Principles of practice in learning mental skills. When practice is carried on under the teacher's direction in the recitation, there are certain principles governing effective practice of which she should be master. These will be briefly discussed in the following paragraph for the purpose of showing how the teacher's knowledge of such principles functions in improving the pupils' activities.

In order that drill may be made an effective instrument in learning, it is necessary that the learner adhere strictly to certain well-established guiding principles. He must not only know what the performance is but he must also know how he is to perform. Proper orientation from the very beginning is essential. Clear models showing the nature of the performance are valuable aids in getting properly oriented. Careful observation of movements, as well as practice in making those reactions which will be used later, are also important guiding principles in the correct formation of habits and skills. Gates [1] gives the most comprehensive list of principles of guidance in the acquisition of information that may be found anywhere in print. They are applicable to the learning of mental skills and are abbreviated here for study.

1. One learns just those reactions which he practices.
2. The form of presentation which is mechanically most convenient should be utilized.
3. One should practice the reaction which will be demanded later in life.
4. Formal exercises, crutches, and other mnemonic devices should be used sparingly and never unless some special reason for them exists.
5. One should try to detect errors by testing ability to recall, and avoid practicing wrong reactions.

[1] GATES, A. I.—*Psychology for Students of Education,* Revised edition. Macmillan, 1930, pp. 327–53.

6. Guidance should be given to the learner in such a manner that he will not only learn and use facts, but that he will also learn how to learn and use them.
7. When recall is blocked, search for clues, and if these fail, drop the practice for the time being before trying again.

If these principles were adhered to more strictly in the beginning stages of learning, there would be little need for drill as remedial work; but remedial practice is one of the commonest uses made of drill in teaching. Its popularity for corrective work has become so great in recent years that it is necessary to set up a general procedure for its use. Usually, some form of diagnosis is necessary to detect the awkward or wrong reaction. This may be best accomplished either by careful observation of the activity or by using an objective test before teaching. When the wrong reaction is once revealed, it is important that the learner be made conscious of his mistakes. He should be taught to find his own weaknesses, rather than be shown them by his teacher. This practice develops a desire on the part of the learner to make only correct responses and to give as little use as possible to the wrong reactions. In other words, the learner becomes alert about what he is doing and, therefore, makes fewer mistakes than he would otherwise make. It is then the teacher's duty to provide opportunities for making the correct reaction possible at the least cost of time and effort to the learner.

In the majority of instances, drill should be largely an individual matter with each member of the class. It rarely happens that the entire class needs to practice on the same exercise, for all members seldom have the same difficulty. In the past, it may be recalled that teachers spent a great deal of time with the class in concert drill. Recent studies indicate that such practice is wasteful and uneconomical

when an appraisal of children's difficulties is not made beforehand. Its use is very limited in most school work.

Standards for drill instruction. Studies dealing with the nature and use of drill in the key subjects suggest that certain standards be observed in drilling. They are briefly summarized below:

1. For speed and accuracy provide drill on actual responses that function in life.
2. Provide opportunities for special practice on difficult phases of skills.
3. Make the practice periods relatively short, about ten or fifteen minutes in length.
4. Have the intervals between practices gradually increase in length until the skill is perfected.
5. Practice should be specified according to the needs of the learner.
6. Use crutches with care, for they may hinder progress more than they assist in perfecting the skill.
7. Provide standards of attainment for the class, and have each individual try to reach them.
8. Use many different kinds of exercises to stimulate activity, for drill easily becomes monotonous.

Checking the effect of drill. The mastery of knowledge, a habit, or a skill regardless of its nature, whether it be connected with a mental or a physical activity, is best shown in the use which the learner makes of it. Some skills lend themselves to appraisal by observation; *viz.*, ability to throw a ball, or ability to use correct oral language. Others must be measured objectively. Practically all kinds of objective tests and drill materials may be used in one way or another to check on mental skills. Among the most important of these are the Courtis, Studebaker, and Lennes practice materials in arithmetic, and others of a similar nature. These tests are valuable for diagnosis to a certain extent

also, but their use in this respect is somewhat limited in the classroom. The teacher will often find it necessary to devise her own tests for diagnostic and remedial purposes; sometimes also practice exercises must be devised to provide special drill to correct individual difficulties. Pupils may evaluate their own progress in drill by the use of a check-list such as the following:

A Check-List for Guidance in Learning a Mental Skill

Directions. Encircle "YES" if you were aware of or observed a certain principle in the development of the mental skill; or encircle "NO" if you were not aware of or did not observe such a principle.

1. Did you observe a model in the early stages of the development of the skill?	YES	NO
2. Were you given a demonstration or an illustration of the kind of performance which you were to learn?	YES	NO
3. Could you follow the model easily?	YES	NO
4. Did you react definitely to the model or situation?	YES	NO
5. Did you just "pick up" the skill?	YES	NO
6. Were you of the opinion that a skill would function without regard to the way in which it was acquired?	YES	NO
7. Did you know that you learned precisely the reaction which you will be called upon later to make?	YES	NO
8. Did you learn the skill as a big unit?	YES	NO
9. Did you learn it in parts?	YES	NO
10. Did you know that the part method of learning a skill introduced misleading connections?	YES	NO
11. Did you know that a few skills, such as learning the multiplication combinations, should not be learned in serial order?	YES	NO
12. Did you learn the skill by actually practicing it?	YES	NO
13. Did you employ formal exercises, such as crutches or mnemonic devices, in learning the skill?	YES	NO
14. Were you aware of the fact that crutches usually add something to be learned in addition to the skill?	YES	NO
15. Were you aware of practicing any errors?	YES	NO

16. Did you try to detect errors in your learning of the skill?.................................... YES NO
17. Did you lose control of the skill at any time?....YES NO
18. Did you observe any clues to try to get control of the skill?................................. YES NO
19. Did you know when you had mastered the skill?.. YES NO
20. Did you apply it to an actual situation to see if it would "work"?............................ YES NO

The outcomes of drill. Drill is to be used not merely for purposes of developing knowledge and skill. It is vitally important as a means of maintaining good habits when they are once established. In other words, drill is essential, first in fixing the reaction or habit and then in making it a smooth-running unit of behavior. A habit is made possible through some practice; skill is the correct use of the habit. The outcomes of drill then are to be found in increased command of tools, increased knowledge, and better habits of work. Knowledge of the multiplication combinations in arithmetic, ability to spell words correctly, good handwriting habits and effective handwriting—these are important. But perhaps more important, in the last analysis, is the ability which should come from drill to use it intelligently when needed; to know how to drill effectively and to know when practice is needed. Intelligent drill saves time. Unintelligent drill is wasteful and purposeless. Elimination of waste in learning should result from effective drill.

Summary. Drill is carefully organized practice. It is attentive repetition of an association, habit, or reaction with the purpose of making it an automatic and a smooth-running unit of behavior. A common misconception of drill is that it is the subject matter, not the reaction, that is learned. Nothing could be more foolish than mere repetition of facts and informations to make them "stick." This practice often leads to the use of many artificial devices in moti-

vating drill activities. Drill should be interesting for itself alone; when it is not, situations must be created in which a need is aroused for practicing an activity. Tests showing the extent of progress from time to time are beneficial motivating devices for mental operations. Physical performance is usually interesting enough in itself to keep the learner actively engaged in it. Often the assignment can be made to stimulate mental performance if self-competitive devices, such as short tests, graphs, charts, rating tables, and other similar devices, are indicated.

In conducting drill work, an unusual amount of care is necessary in getting the reaction properly initiated. This is the secret of effective drill. It prevents a great deal of unnecessary remedial work later. Awkward and wrong reactions are avoided, and the drill process becomes a forward-moving activity instead of a "patching up" one in learning. Less time and effort will be consumed in corrective work if the proper precautions are taken in the initial stages of learning a reaction. Corrective work will, however, be necessary and provision must be made for special drill to get the reaction properly re-organized. When the reaction or habit is once correctly established, further practice will be necessary to develop ease and dexterity in its performance. Skill is the result of the reaction and not the reaction itself.

STUDY QUESTIONS

1. What is the significance of the statement that one learns just what he practices?
2. Why is it an advantage to the teacher to understand that it is the reaction and not the subject matter that is learned?
3. What is the distinction between a habit and a skill? Illustrate with specific examples.
4. Why is it impossible to develop a skill before the habit is established?

5. What is the value of models in learning a skill?

6. What are the main characteristics of effective models?

7. Why is remedial work often necessary in learning mental and motor reactions?

8. What subjects usually require a great deal of remedial drill? Why?

9. What is a specific instance of motivating drill through discovery of a need for it in some meaningful activity?

10. What is the nature of the evidence which supports direct systematic drill over incidental drill?

11. What factors will condition the assignment for practicing a reaction out of class?

12. What devices may be used advantageously in stimulating drill activities?

13. What guiding principles should be kept in mind in conducting remedial drill work?

14. What is the value of a check-list in developing a mental skill?

15. What is the value of the following factors in drill?
   a. Mnemonic devices
   b. Length of practice periods
   c. Intervals between practices
   d. Standards of attainment
   e. Diagnostic tests
   f. Time limits

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CHAPTER XI

The Review

Introduction. The review is a time-honored technique used by teachers to obtain permanence in learning. It is based upon the need for practice or exercise as established by experiments in the study of forgetting. That it has been popular is obvious, for it has been employed universally as a means of mastering those fundamental facts and skills which were believed essential in school and life; but it would not be an exaggeration to say that no activity has been worse abused than the so-called review lesson. The review has been a godsend to many teachers, for without it they would have been entirely at a loss to know what to do to keep themselves busy on many an unplanned day. Experience and experimentation in recent years have furnished considerable evidence of the ineffectiveness of former practices of reviewing, and have revealed the effectiveness of modern practices. Sound ideas concerning the purpose and use of the review technique are necessary for effective teaching.

A definition. A review implies a recall of experiences already past. To review means literally to "view again." A review is not a review until one has already learned a new system of facts or has completed an experience; for up to this particular stage the learning involved is of a different type from that of reviewing. It is either observational learning, motor learning, associative learning, problem solving, or other type of learning. The review involves a recall or *re-view* for purposes of renewing the learning already passed

and of carrying it on to mastery. In one sense, a review is a delayed drill, for it aims at the mastery of facts and skills; but it differs from drill in that it is not mere repetition of facts and skills in the form in which they were originally learned that is desired, but rather the introduction of new elements and the reorganization of thought.

Review and drill differentiated. There is much confusion in the minds of many concerning the difference in meaning between review and drill. These two types of learning are not identical in character, although they may appear to be alike in function. The review is properly an entirely different process from drill. It is the reorganization and integration of experiences. It is seeing facts in new relationships. It is a new view of previously learned facts and skills and not the mere rehearsal of them in the same identical way. An illustration will help to make the point of view clear. If a student learns history dates in a logical order to the point of making one perfect recall or recitation through establishing associations with the events to which they properly belong, he may review these dates by making proper associations with the lives of noted historical characters. If, at first, he learns the content of printed pages by finding answers to questions, he may review these pages by making a summary or by making an outline of them. The point is that one should not review the same material each time in the same way, for nothing new accrues from the practice. A review is a reworking of the material from a different point of view, while drill is the activity involved in repeating data or behavior during the first learning.

A new view of review. The review is commonly employed for purposes of preparing for an examination, of mastering facts and skills, of making up deficiencies in learning, or of appraising habits of study. However, these

functions may be classed as the less important uses of the review, for it is questionable whether reviewing is the most effective means of reaching these goals. Certainly, no progressive supervisor would ask his teachers to spend a great deal of time in merely preparing a class for an examination. If there is an unworthy aim of the review, this is one. Most reviewing should be employed for purposes of getting pupils to see facts in new relationships and thus enrich experience. This practice involves the reorganization and reintegration of their experiences, aiming at new products. Naturally, the process of reorganizing one's experiences aids in fixing facts and information in mind. In fact, all the other functions of the review can be indirectly attained through the process of reorganization and integrations of facts, informations, and skills in the light of new experiences.

Helpful suggestions for review. Crawford[1] gives a rather complete list of suggestions on reviewing, including specific hints as to methods to be followed. Some of these are reproduced here, for the most part verbatim.

1. Review for other purposes than getting good grades.
2. Review in the way you are to be tested.
3. Have the review involve new learning.
4. Direct the review in some measure to the places where you are weakest.
5. Make the review original thinking, as well as assimilation of the thoughts of others.
6. Review to establish coherence and continuity between parts of the course.
7. Review by organizing previous knowledge.
8. Make the review in part a process of checking and verification.
9. Let the review procedure and study procedure be different.

[1] CRAWFORD, C. C.—*The Technique of Study.* Houghton, Mifflin, 1928, pp. 253–6?.

10. Review the subject, using a different classification from that by which it was originally studied.
11. Review both as to pattern and as to the separate threads.
12. Review for main points rather than for details.
13. Review by condensing what you know.
14. Review by making an outline of the course.
15. Review by solving problems which involve the material treated in the course.
16. Use the chapter exercises in the textbook for reviewing.
17. Use review questions as guides when they are available.
18. Review for definite purposes.
19. Test yourself as you review.
20. Facilitate review by means of the original method of studying.
21. Review by taking advanced courses in the same field.
22. Employ review methods which involve visualization.
23. Review by means of previous notes.
24. Employ group reviewing with discretion.
25. Review by consulting new sources.
26. Review both at short and at long intervals.

These suggestions are not ranked or weighted in order of their significance. They are suggestive of more effective ways of conducting reviews. Their greatest importance to the teacher and pupils will be found in the detailed and tangible manner in which they are presented. The reader may add other suggestions to the list if he chooses to do so, for it is not all-conclusive.

Review useful in many situations. Reviews have been common in all subjects but perhaps much more common in the tool subjects than in others. Wherever important facts or skills have been involved, review has been thought a necessary procedure. More intelligent use of the review is now becoming common. It is now understood that subjects taught through activities and units require use of the review technique; that difficult aspects of the content subjects, such as are found in geography, history, and science, in which

the modern trend is to establish large units of study, demand carefully organized review; and that problems and projects are often the most interesting and effective means of reviewing subject matter.

A typical illustration of how the review may be satisfactorily and effectively carried on in history by changing the original attack will aid the reader in understanding the value of review of large units. Suppose the class has been studying history in a logical manner by periods. The essential events, such as political parties, great leaders, tariff, manufacturing, transportation, and the like, of each historical period are carefully associated with the period to which they properly belong, irrespective of their relationship to other periods. This is a logical method of teaching the events. In reviewing these events, the teacher may use the problem method and treat each of these topics as a major problem running as a continuous thread throughout all historical periods. Each major problem may be studied in its relation to the others; it may be broken up into minor problems and each of these considered in order. This forces a reorganization of subject matter and new understandings develop. The tariff, transportation, and other historical problems may be treated in their relation to all periods and epochs of mankind. This method, though suggested here as a way of reviewing, is the psychological method of teaching the events of history, and it is gaining considerable favor among progressive teachers as the best method to use in the initial approach to the subject.

The review is an essential feature of unit plans and mastery techniques. A number of these will be briefly discussed, calling the attention of the reader to the particular phase of the plan or technique in which the review constitutes an important aspect of the work.

The Horn-Ashbaugh method [1] of teaching spelling involves reviewing as an important aspect of the process of pre-testing, studying, and re-testing. The formula begins with testing a group of pupils on a given number of words, usually 16 or 20, on Monday; and continues with studying on Tuesday; testing and reviewing on Wednesday; studying again on Thursday; and finally, testing and further reviewing on Friday. Subsequently additional reviews of important words are provided for. The Morrison mastery technique [2] begins with pre-testing the pupils' knowledge of a given unit of material. This practice is followed by teaching, and re-testing, in order. Then the formula is continued by adapting the procedure and final testing for mastery of the unit. In the Morrison plan, reviewing becomes an essential aspect during the fourth and fifth steps in which the procedure is adapted to the newly discovered conditions and the final testing is effected. The Dalton Laboratory Plan [3] also makes considerable use of the review in attaining mastery of an assignment or contract, since about 95 per cent mastery is demanded of the pupil under this plan, especially if the pupil, upon taking the final test, shows only moderate success. Other unit planning schemes, such as the problem, project, unit, job, and the like, involve the review technique to a large extent to insure mastery. A good summary and review are generally necessary before conclusions are reached in any type of reflective thinking that embraces the handling of data of a detailed nature. Common practice associates reviews with difficult ideas and extended experiences.

[1] HORN, ERNEST, and ASHBAUGH, E. J.—*Lippincott's New Horn-Ashbaugh Speller*. Lippincott, 1926. See general directions to teachers.

[2] MORRISON, H. W.—*The Practice of Teaching in the Secondary School*. University of Chicago Press, 1931, pp. 89–103.

[3] PARKHURST, HELEN—*Twenty-Fourth Yearbook* of the National Society for the Study of Education, Part II, pp. 84–94.

Making reviews interesting. The review may be a very uninteresting affair if it is conducted as drill, by merely repeating materials over and over again in exactly the same way each time. Incidentally, this practice may be regarded as the chief reason why reviewing has commonly been undertaken by pupils in a half-hearted, passive manner. A well-organized review, involving a new way of handling materials, should be a sufficient stimulus in itself to get children interested in the activity. If children are equipped with good habits of study, they will find some such procedure as preparing a report or an outline of the work covered an interesting exercise for study. They may also organize materials previously studied in the form of a summary, a graph, or a statistical table, or some other condensed and interesting form. It should be the teacher's duty to see to it that new and interesting experiences are provided from time to time, to cause children to attack their reviews in a different manner. Unless the teacher is quite resourceful in this respect, she will probably have to resort to games and contests to stimulate interest. These are, however, less desirable than an intrinsic interest in the review itself.

Assigning independent work. In most cases, the assignment for the review is similar to that for other methods of teaching and learning. One precaution, however, must be observed, and that is, the assignment should call for a reorganization of materials previously studied; that is to say, preparation of the lesson should not be a mere repetition of the materials. The preparation should involve new organization of facts and informations. Otherwise, the review becomes formal drill.

Some suggestions are indicated here on possible ways of making the assignment for the review. A number of factors,

however, should be kept in mind in employing any one of these suggestions. Among these may be mentioned keeping the assignment within the range of ability of the class, stating clearly what is to be done and how well it is to be done, and suggesting a plan of procedure different from that employed in previous study. Among the numerous types of assignments, the following are probably most effective for the review:

1. To make a summary of the materials originally studied
2. To evaluate materials
3. To answer questions about materials
4. To work out multiple-response exercises
5. To outline the work previously covered
6. To write out questions from materials
7. To prepare reports to give in class
8. To make charts, graphs, maps, statistical tables, and pictures

The pictorial method of reviewing materials is very effective in crystallizing facts. A graph, chart, or statistical table will demand considerable reflective thinking in condensing and arranging the data of printed pages in tabular form. It possesses the added advantage of displaying results in a graphic manner to pupils.

Effective recitation activities. The activities of the recitation during review may consist of oral discussion, outlining, summarizing, making graphs, maps, or statistical tables, or of explanations by the teacher to clarify certain points that may not have been understood in the first study of the subject. In any case, the recitation should contain new elements and proceed in a different manner from the original recitation in which the data were learned. The important thing is not to make the procedure a mere deadening repetition of the original experience. A common procedure is to question pupils on what they have previously learned, to

point out their errors and to supplement the original presentation. This type of review is still good under some conditions; but theorists are quite general in advocating that the review shall be a reworking of the material from a different angle.

Some of the typical activities of a better type of review procedure call for the reorganization of the original data, such as making a topical outline or summary, underlining important elements in the original material, making marginal notes, paraphrasing, composing from direct observation of objects, persons, events, etc.; making a chart, a graph, a statistical table, an outline map, a scrap notebook, a memorandum, and the like. For the convenience of the reader a list of review activities appropriate for the recitation is suggested below. If any one of these has been employed in previous study or recitation, the others would be desirable for reviewing.

1. Note the chapter and paragraph headings in books.
2. Study the summaries of sections, chapters, and parts of books.
3. Observe first and last sentences of paragraphs.
4. Underline important facts in paragraphs.
5. Make marginal notes in the book if it is your own.
6. Answer the study questions.
7. Read the annotated references if given: or read a few of the selected references.
8. Make a bibliography of your own.
9. Outline the paragraphs and chapters of the book.
10. Summarize or condense what you read.
11. Paraphrase poetry.
12. Make an anthology.
13. Make out sets of test questions.
14. Make a collection of articles, objects, specimens, etc.
15. Write out your observations.
16. Recite to yourself.
17. Make a scrapbook.

18. Make a chart.
19. Make a graph.
20. Make a statistical table.
21. Make an outline map.

Not all of these activities are applicable to a given unit of material. For instance, it may not be possible to make a chart, or a graph, or a statistical table from data, especially printed pages, whereas a summary, a picture, a set of questions, or an outline may be readily adapted to them. This is a matter to be determined largely by the pupil and teacher when they attempt to review materials.

One writer [1] suggests that the pupil be taught to review in the way he is to be tested. This does not imply that he will merely cram for an examination but, instead, that he will prepare himself by well distributed reviews to respond in the manner in which he will later be called upon to respond. For example, if the examination is to be a multiple-response type, the recitation or study should contain some multiple-response exercises; or if the examination is to be a report or an essay, the appropriate recitation activity suggested is organization and discussion. The preparation of pupils solely for an examination is, however, by no means the chief function of the review recitation. It is important only to the extent that the school makes the practice necessary. In schools where examinations are less stressed, reviews may take any form that seems appropriate.

Appraisal of the effectiveness of reviews. The results of a review are commonly measured by some type of test. The essay test is older and probably most common, but the new-type objective tests are believed by many to be most useful since they permit a better sampling of the original data than the essay test. Oral testing of knowledge gained

[1] CRAWFORD, C. C.—*Op. cit.*, p. 254.

by review is still rightly employed under certain circumstances.

The making of an outline, a written summary, a map, chart, or graph, or the exercise of a skill under observation are also good tests of the effectiveness of review.

In a review test one should be sure to include some items which test the new view-point developed by the review. Otherwise some values may be lost which have been a part of the review activity.

The effectiveness of review is often measured by a repetition of original tests and by comparison of scores made upon these tests. The gain which may be attributed to the review, or the maintenance of knowledge or skill shown by the comparative scores on both tests, is an objective evidence of the effectiveness of reviewing.

Unnecessary reviewing may often be prevented by the simple expedient of repeating tests at intervals. The repetition of the test may be all that is necessary in order to maintain a skill at its proper stage of effectiveness. Sufficient time should elapse between the repeated use of tests to prevent memorization of test items without understanding of facts and principles.

The outcomes of the review. The outcomes of reviewing may be good or bad, depending on the method by which the review is conducted. If it is conducted primarily as a means of passing an examination, it can hardly be justified as a worth-while procedure. Effective habits of work and study and good attitudes involving loyalty and respect cannot be built up in this manner. The practice is sometimes referred to as "cramming" and is to be denounced as an unworthy educational procedure. If, however, the review is conducted for other purposes than getting good grades and merely "getting by" examinations, it may result in

genuine love for study, broadening of knowledge, mastery of materials, and increased enjoyment in work. It is unquestionably one of the most effective procedures ordinarily found in schools.

Summary. The uses and misuses to which the review has been put are numerous. The preparation for examinations, the mastery of facts and skills, the remedy for deficiencies in learning, the appraisal of habits of study, the memorization of facts, constitute a few of the purposes for which the review has been employed. Instead of being merely a device for maintaining a certain standard of efficiency, it should be one of the most effective procedures in developing reflective thinking, providing it is employed to train pupils to reorganize and redintegrate their experiences. It should be a reworking of past experiences to extend and enrich them as well as to fix facts and skills. Drill plays the important rôle in learning facts and skills to a point of a single perfect recall or to a point at which the learner can make one successful performance of the activity. After that, review plays the chief rôle in over-learning. It is a part and parcel of all learning in which mastery or over-learning is the goal. Both the review and drill may aim at the same product or outcome. In this respect, they are identical. This is the source of the frequent confusion of drill and review. Usually, the review is self-motivating, for it is not doing the same thing over and over again in the same way as in the case of drill. It is doing the same thing in different ways each time. This makes the review an interesting activity. Otherwise, it would become very monotonous and uninteresting, as indeed it sometimes does. Large units of work add greatly to the enthusiasm which pupils develop in reviewing their assignments. Here the problem and project will be found valuable in provoking

interest and thought. Almost any kind of material or subject matter may be made interesting by a review if it calls for the reorganization of facts and information previously learned. An important principle to keep in mind is: Conduct the review differently each time. Never repeat in the same manner, for nothing new accrues from such practice and interest usually subsides. Vary the type of activity frequently or modify it so that pupils will not be required merely to mark time in learning.

STUDY QUESTIONS

1. What have been some of the many uses made of the review?
2. How does the review differ from drill?
3. How may the review be used to reorganize experiences?
4. What is the value of problems and projects in reviewing?
5. How does the Morrison mastery technique make use of the review?
6. What is the advantage of reviewing in the way one is to be examined?
7. How may the graph, the chart, or the table be used in reviewing?
8. What is the objection to reviewing for an examination?
9. What is a good principle to follow in conducting a review?
10. Why should the review not be used for remedial purposes?
11. If pupils originally studied or learned a certain unit of material by asking or answering questions about it, how may the assignment be made for effectively reviewing it?

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CHAPTER XII

Testing and Examining

Introduction. That examinations are indispensable to effective school work is an assertion which does not meet with the approval of all teachers. There are many who still believe that examinations can be dispensed with for other more worthy activities. They contend that examinations tend to produce a negative effect on pupils' work. Instead of encouraging pupils to greater effort, they interfere with the normal flow of progress through proposing rewards and penalties extrinsic to the inherent appeal of the activity. This is probably true wherever tests and examinations are considered weapons of defense by the teacher; but the practice of using tests as disciplinary devices is no longer a legitimate one.

Granted that tests are often misused, it is difficult to understand how the efficacy of methods of studying and teaching can be measured with any degree of accuracy without tests. Ordinary observation is inadequate; so is the procedure of teaching. Something more accurate than offhand appraisal of learning is necessary. Tests and examinations are primarily intended for this purpose. Although examinations have been extensively used for other purposes than for guiding and motivating learning, the practice is changing, and many now believe that tests are of value chiefly as devices for motivating effort and for diagnosing weaknesses. The objection to tests and examinations is not inherent in the tests themselves, but rather in the use made of them by the teachers. Tests and examinations have a much more worthy function to perform than that of

merely furnishing data for a record of pupils' progress. It is the purpose of this chapter to make clear how tests are to be used in teaching.

A description and classification of tests. Examinations are known under a wide variety of terms, such as quizzes, tests, oral reviews, term papers, notebooks, outlines, essays, and a host of other names. They vary according to form, use, type, etc. For purposes of illustration a tentative and partial classification of examinations is indicated below.

1. Form
   a. Oral examinations
   b. Written examinations
2. Purpose
   a. Prognostic
   b. Diagnostic
   c. Power
   d. Speed
   e. Accuracy
   f. Quality
   g. Range
   h. Survey
3. Organization
   a. Essay
   b. Objective
4. Period of time of administering
   a. Daily
   b. Weekly
   c. Monthly
   d. Term
   e. Semester
   f. Year
5. Duration
   a. Short
   b. Long
6. Method of scoring and interpreting results
   a. Non-standardized
   b. Standardized

7. Abilities involved
   a. Speed
   b. Comprehension
   c. Organization
   d. Judgment
   e. Retention
   f. Appreciation
   Etc.
8. Nature of materials included
   a. Arithmetic
   b. Language
   c. Reading
   d. Spelling
   e. Writing
   Etc.
9. Mental functions involved
   a. Association
   b. Memory
   c. Recall
   d. Recognition
   e. Problem solving
10. Type of response involved
    a. Alternate-response
       (1) True-false
       (2) Yes-no
       (3) Plus-minus
    b. Multiple-response
       (1) Best-answer
       (2) Correct-answer
    c. Completion
    d. Matching
    e. Identification
    f. Enumeration
    g. Essay

Other classifications of examinations are possible, but these will suffice to show the extensiveness of tests and examinations in school work. A number of these classifications need no further explanation, for their titles suggest

clearly enough the nature and the purpose of the tests included, while certain other classifications call for a limited amount of discussion to make clear to the reader the character of the tests included under them.

Further enumeration and description. The length of tests has an important bearing on their reliability. Examples of tests of different lengths include: the Monroe four-minute reading tests and the Courtis five-minute reading tests; the Thorndike-McCall thirty-minute reading scale and the New Stanford thirty-five-minute reading tests. The *essay test* is the old familiar written examination. The *objective test* or examination is characterized by the fact that it may be checked and scored reliably by any one who has the scoring key, *i.e.*, it can be scored by two or more persons independently and each will give the same score or rating. Its items or elements are usually so arranged that each item counts as one point. The *prognostic test* predicts probable success. *Intelligence tests*, individual and group, are examples of prognostic tests. The *diagnostic test* reveals learning difficulties; and the *power test* determines how difficult a task a pupil can do. Its elements range in difficulty from very easy to very difficult exercises. The *speed test* determines the number of correct responses which can be made in a given time out of a total number of approximately the same difficulty; the *quality scale* consists of a series of elements or items which vary from a very low degree to a very high degree of excellence. The steps among the elements are equal or their magnitude is known. The *accuracy test* consists of a series of elements of uniform difficulty, designed to indicate the percentage of errors which the pupil makes on it; and the *survey test* aims to measure all these elements in different ways to get a rough estimate of general ability. The *standardized test* is an objective test which has a uniform procedure

of administering, scoring, and interpreting results. It has norms which permit comparisons of the group tested with other groups. The *non-standardized test* is also an objective test but without standards.

Some types of informal or non-standardized objective tests serve certain purposes more advantageously than others. Recall is usually most effectively measured by *completion tests;* and recognition is most effectively measured by *alternate-response, multiple-response, matching,* and *identification tests.* Organization, comprehension, and speed are also effectively measured by these objective tests. Ability to reproduce or to compose and write cannot be successfully measured by the objective examination. This ability is best measured by a well-organized essay examination. All these different kinds of tests should be familiar to teachers. There are a number of recent books and manuals written on the newer types of examinations.[1] Teachers should aim to understand their chief characteristics and purposes so as to be better able to employ them in improving classroom instruction.

What tests are for. Examinations should function primarily to develop a friendly attitude among pupils toward periodical appraisal of progress and to arouse a sense of realization of their value to pupils in improving learning in general. Too often, tests are considered evils to be tolerated, rather than instruments to be used to improve knowledge and methods of work. The unfavorable attitude which pupils often assume toward tests is primarily due to a carry-over of a great many misconceptions from the days when

[1] RUCH, G. M.—*The Objective or New-Type Examination.* Scott, Foresman, 1929.
LEVINE, A. J., and MARKS, L.—*Testing Intelligence and Achievement.* Macmillan, 1928.
WILSON, G. M., and HOKE, K. J.—*How to Measure,* Revised edition. Macmillan, 1928.

the older types of examinations were so much misused. Why the old prejudice should persist among pupils in our modern school is often baffling to educational leaders because in many modern schools pupils welcome and enjoy tests. The unfriendly attitude of pupils toward tests is doubtless due to the fact that teachers have not given testing the same consideration that they have given to other more or less important activities in teaching and to the fact that tests have been regarded as hurdles to be surmounted or as forms of punishment to be undergone. An attempt should be made to overcome the fears and prejudices of children and to make them realize the values of tests of the various types. Responding to a good test is a valuable learning exercise. Pupils can gain a variety of experiences from them among which are: learning new things, getting new experiences and view-points, estimating progress, discovering weaknesses, and finding new things to learn. In fact, satisfying experiences with tests will teach children to respect their value and use in the classroom.

A detailed analysis. A more detailed analysis of the functions of tests and examinations is given below in tabulated form for purposes of study. The reader will find it interesting and profitable to analyze the list in an attempt to discover the various old and new uses of tests among pupils and teachers.

A List of Functions of Tests

1. To check on extensiveness of reading
2. To develop a mental set
3. To review materials
4. To increase comprehension
5. To focalize attention
6. To find weaknesses in language usage
7. To get new view-points
8. To reveal difficulties in comprehension
9. To develop ability to find one's own errors
10. To find a starting point in learning
11. To motivate activities

12. To compare pupil performance
13. To orient pupils in an activity
14. To learn what is important in materials
15. To discipline pupils
16. To learn to follow directions
17. To promote pupils
18. To classify pupils
19. To check on efficiency of instruction
20. To check on loafers
21. To get a general idea of a unit of work
22. To hold pupils to their tasks
23. To collect records
24. To predict success or failure
25. To familiarize pupils with tests
26. To learn new materials
27. To find out how difficult a task can be done
28. To reveal the quality of work a pupil can do
29. To develop speed of reaction
30. To learn to organize materials
31. To evaluate materials

The subject matter of tests. The subject matter of tests varies as widely as the curriculum. In standardized form, tests may consist either of a single type of subject matter, as in an arithmetic test, or of a variety of subject matter, as in a reading test of the Sangren-Woody type. Standardized tests are available in almost every subject of the elementary and secondary school. Before such a test is selected, the teacher should examine the subject matter to see whether or not it is suitable for the purpose which she has in mind. If she wishes to test power in narrative reading she might choose the Stone Series of Narrative Reading Tests; if, on the other hand, she wishes to get a general sampling of the pupils' abilities in reading, she might choose either the Gates or the Sangren-Woody Test.

Subject matter varies from simple drill exercises, as in an arithmetic test, to complex mental processes, as in interpreting the more difficult paragraphs of the Thorndike-McCall Reading Scales. It is important that this subject matter be practical, socially valuable, of good quality, and of interest to the pupil. It is conceivable that many pupils

make poor scores on subject matter of little interest to them when they might do much better on material inherently interesting. A teacher's effectiveness in lessons of the testing type is measured by the skill she has shown in selecting a test which contains subject matter similar in kind to the material which the children have encountered in their learning activities. Otherwise, the test may measure simply the power developed by the children to react to tests of unsuitable subject matter.

Informal teacher-made tests look for their subject matter to the same sources as the formal test. In this case, however, the teacher has a much more precise control over the subject matter of the test than when she uses a standardized test. Tests of skill in reading may utilize material from any subject. Spelling tests of an informal type should make use of a sampling of the words which the child has been attempting to learn. In history, geography, and other subjects, the material of the test is determined by the curriculum content in the subject.

Tests of either the formal or informal type generally contain two kinds of material: (1) content material; and (2) test exercises. Sometimes the test exercise is both content and exercise at the same time, as in tests of skill in the fundamentals of arithmetic. No test is valid for testing knowledge or skill which does not in its content call for subject matter or skill of a kind which has been taught to the pupils.

The construction of tests. The construction of informal tests is coming to be the duty of the teacher in a modern school. In order to become expert in the making of tests it is necessary that the teacher have a detailed course of instruction in the techniques of test making. To give such training here is out of the question. The following paragraphs, therefore, will give the reader a simple outline dis-

cussion of some of the outstanding problems which are met in the making of a test. The good teacher will not be satisfied to use anything except a well-constructed and reliable test.

Steps in test construction. *The first consideration* in a good test is the subject matter which it contains. Here the teacher is in control. She knows what subject matter has been taught and is in a position to make a test which adequately measures what she has taught. To be valid, the subject matter of a test must be of the type and quality which has been learned by the pupils.

Having determined upon the subject matter to be included in the test, *the next problem* is to choose the type of test elements which are most appropriate to the material and the purpose which the teacher has in mind. If it is desired to test the power of a pupil to organize his material, sense relationships, and express thought, the essay test may be the test form to use. If the teacher wishes to test the power of a child to comprehend the meanings of connected sentences and paragraphs, a recognition test may be chosen; if, on the other hand, it is desired to test retention of facts and ideas, a recall test may be chosen. The test type must be appropriate to the purpose which leads to the test. The same test material may be thrown into different forms, depending upon the purpose which the teacher has in testing.

The next consideration is the development and organization of the test elements in terms of their validity, reliability, and ease of scoring and interpretation. This requires a thoroughgoing familiarity with the various types of tests available to teachers. It is necessary, for example, in making an alternate-response test to know how statements or questions should be worded; what particular words in the state-

ments give different shades of meaning, as *always, frequently, occasionally,* etc.; how many different statements or elements should be included; where answers are to be indicated—before or after statements; and how answers are to be indicated, as yes-no, true-false, or plus-zero. In making a multiple-response test, it is necessary to know how questions or statements should be worded; how many responses are to be suggested; which one is to be marked by the pupil; how it is to be marked; where the answer is to be indicated; whether it is to be the best or the correct response that is to be marked; and how many questions are to be included in the test. Likewise, in making identification, matching, and completion tests, it is necessary to understand the most important factors included in the technique of making them.

The next step in the making of informal objective tests is to analyze the subject matter to determine whether it contains elements which can be readily adapted to any one of the various types of objective tests. This requires ability to see subject matter in different forms of organization; that is in parallelisms, cause and effect relationships, contrasting features, tabular arrangement, or other forms. This ability to adapt materials to new forms of organization is acquired through practice in attempting to make tests from materials. A few examples will illustrate how this is accomplished.

The multiple-choice test. This type of test is now regarded as a highly useful and reliable test. A sample follows:[1]

The choker on an automobile regulates the amount of air which enters the carburetor. On a cold day the choker is adjusted so that it diminishes the amount of air used. This makes the mixture richer in gasoline so that it will ignite more easily. As the engine

[1] Adapted from PIEPER, C. J., and BEAUCHAMP, W. L.—*Everyday Problems in Science.* Scott, Foresman, 1927. Teacher's Manual, p. 229.

warms up, the position of the choker is gradually changed so that more air may enter to secure the best mixture and to conserve the gasoline.

1. The chief reason why the choker on an automobile is adjusted on a cold day is: (3) more air enters the carburetor; (1) the mixture is richer in gasoline; (2) the automobile runs more smoothly; (4) less air gets through the wind shield on a cold day.

This question illustrates the correct-answer type of multiple-response test. It could be made into a best-answer type by shading the meaning slightly for each response. But this kind of question is about as difficult to make as it is to answer by children. It is more desirable to use the correct-answer type with children of the lower grades. It should be noted that four responses were used in the example above, and they were not numbered in consecutive order from one to four, but in a mixed order to interfere with guessing. The numbers one to four are commonly used for this purpose. This scheme of alternating numbers will compensate for any weakness of the test due to the difficulty of finding a sufficient number of responses to assign a given question. It is always much easier to find two or three possible responses to a question or statement than it is to find four or five. It will often be found advantageous to the teacher in making out multiple-response questions to resort to the practice of inserting one incorrect response among three or four correct ones and having pupils find and mark the incorrect one.

Alternate-response and completion combined. The paragraph used in Example 1 also lends itself readily to the alternate-response and completion types of statements, as the illustration below shows, but it is not easily adapted to the matching or the identification types. Observe the samples.

Directions. Mark the TRUE statements plus (+); and the FALSE ones zero (0), at the right.

1. The choker on an automobile should always be set so that a rich mixture of gasoline and air will be furnished. 1. 0
2. The choker on an automobile should sometimes be set so that a rich mixture of gasoline and air will be furnished. 2. +

Directions. In the blank space after the number at the right, write the word which corresponds to the same number in the blank space in the sentence.

1. The (1) regulates the (2) of air which enters the (3) .

1. choker
2. amount
3. carburetor

The first alternate-response statement above is false, so it is marked with a zero. The one word which makes it false is "always." The second alternate-response statement is true, so it is marked with a plus symbol. The one word which makes it true is "sometimes." These words are commonly referred to as determinants; that is, they determine whether the statement is true or false as written.

A great deal of care must be exercised, too, in making completion tests. Certain important words should be omitted, but sufficient key words must be retained to enable the pupil to establish the proper associations in the sentence. Auxiliary verbs, adjectives, adverbs, and conjunctions should never be omitted. The technique illustrated in the completion question above is quite involved, but it is very convenient for scoring purposes.

The matching test and test construction. The following example of a matching test illustrates certain principles involved in test construction: [1]

[1] The material used in this paragraph is adapted from Eggleston's *History of the United States* by permission of the publishers, D. Appleton Co.

Long before the struggle for independence, there was much dissatisfaction in the colonies. Many of the governors whom England sent over were cruel and dishonest. The Americans did not like the transportation of criminals, nor the action of the British government in disobeying the laws made to keep out slaves. They were also much annoyed by the manufacturing acts, which prevented them from sending away woolen goods, hats, and other articles of their own make, from one colony to another. Most of all, they disliked the navigation laws, the object of which was to compel them to do most of their trading with England. The enforcement of these laws was in the hands of custom-house officers who, in 1761, asked the courts for permission to search any house, at any time, for the purpose of finding smuggled goods. This produced a great deal of excitement among the colonists, and further strengthened the cause for a separation of the colonists from their mother country. In 1765 the English Parliament passed another Act which greatly annoyed the colonists. This law, called the Stamp Act, required that all bills, notes, leases, and other such documents used in the colonies should be written on stamped paper and sold by officers at such prices as should bring revenue to the English Government.

Directions. Match the items in the left-hand column with those in the right by placing the number of the item at the left in the blank space following the item at the right as in the following:

Acts or Laws	Immediate Results	
1. Manufacturing	Searching homes..............	1. 3
2. Navigation	Taxing notes, leases, etc......	2. 4
3. Smuggling	Prohibiting inter-colonial trade	3. 1
4. Stamp	Requiring colonists to trade with England.............	4. 2

Directions. Identify and correctly write words which are defined by the following sentences, in the blanks at the right.

1. (1) act required bills, notes, and leases to be stamped...................... 1. stamp

2. __(2)__ acts prohibited colonists from sending articles of their own make from one colony to another.................. 2. __manufacturing__
3. __(3)__ act permitted custom-house officers to search homes...................... 3. __smuggling__
4. __(4)__ acts required colonists to trade with England.......................... 4. __navigation__

Directions. Place the number of the best response in the blank space at the right.

1. The navigation acts were not primarily concerned about: 1. __2__
   (1) stamped documents; (3) trading with England;
   (2) slavery in the colonies; (4) trading with Holland.

In making out tests, such as the type examples above illustrate, a sample should always be given to supplement the directions, and, therefore, to aid in making the required performance clear and comprehensible to the pupil.

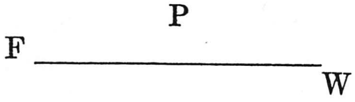
The identification test. The paragraph quoted is full of possibilities of objective test making. It is adaptable to almost any kind of objective test. But not all paragraphs are as readily made into objective tests as this one. There will be much material that can be made into alternate-response and completion tests, but there will be comparatively little that can be adapted to matching and identification tests. A good example of a paragraph which can be adapted to an identification test is given below.

Directions. Below are diagrams of three orders of levers. Read the paragraph at the right and identify the FULCRUM, the POWER, and the WEIGHT in each diagram.

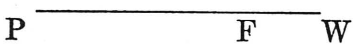
The diagram at the left shows three orders of levers. In the lever of the first order, the fulcrum is between the power and the weight. In the lever of the second order, the weight is be-

Then identify each diagram by writing the correct title for it.

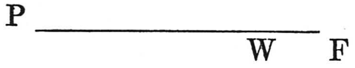
Lever of the —— order



Lever of the —— order



Lever of the —— order



tween the fulcrum and the power, while in the third order, the power is between the fulcrum and the weight. In the lever of the first order, the power will move through a greater distance than the weight, as long as the fulcrum is nearer to the weight than the power, but when the fulcrum gets nearer to the power than to the weight, the weight will move through a greater distance than the power. In a lever of the second order, the weight is always nearer to the fulcrum than the power is, and will, therefore, always be greater than the power and will always move through a smaller distance than the power. In the third order, the power is always nearer to the fulcrum than the weight is, and will, therefore, always be greater than the weight and move through a shorter distance than the weight.

Necessity of knowing various test forms. These few examples illustrate the importance of seeing possibilities of different forms of organization of materials in informal test making. The difficulty that is often experienced in making informal objective tests is the lack of knowledge of the possible forms of organization in which subject matter can be adapted. Without this knowledge, the test maker may analyze materials but not know what forms of organization can be most advantageously adapted to these materials. The following suggestions will be found helpful to the teacher in making informal objective tests.

1. Study and become familiar with several new-type tests.
2. Learn the various forms of organization into which subject matter is commonly adapted for testing purposes.
3. Analyze the subject matter with step (2) in mind, and get some experience with reorganizing subject matter into different forms.
4. Continue experimenting with subject matter and new forms of test organization until skill is attained in making a new-type test.

Making the test reliable. When the ability to see subject matter in relation to the different forms of test organization has been gained, and when some skill is attained in devising test questions from subject matter, the test maker should consider the value of finding sufficient items or questions to make up a satisfactory test. A short test—one composed of ten or fifteen items—is not extensive enough to give a reliable measure of pupil-performance. An informal objective test should contain at least forty or fifty items. Many more would be preferable and desirable, for the more items a test contains, the greater will be the opportunity to get a wide distribution of each pupil's performance. Short tests usually fail to give a wide enough distribution of performance to enable the teacher to check with any degree of accuracy on achievement. In case it is found advantageous to make tests containing a limited number of items, it would be well to let the scores accumulate as tests are administered until a sufficiently large score for each student is obtained. In this way, a distribution may be obtained in which a fairly wide scatter of performance will be shown.

How to make testing interesting to children. The interest taken by children in a testing lesson depends upon several factors: their experience with the subject, their experience with tests and examinations, and the kinds of tests used. Perhaps because they are new, objective tests have

struck the fancy of both teachers and pupils so that there has seemed to be little need for motivating the test lesson. Obviously, it is motivated to a degree by marks, report cards, and other extrinsic measures. However, the best motivation for test exercises is that intrinsic to the activity itself. If tests are objective, if they are fair, if the results are clearly shown to the pupils, little need for any other attempt to create interest in them is felt. The prejudice and fear that formerly characterized pupils' attitudes toward tests were due to the misuse of tests by teachers.

Tests are more interesting when they are given at short intervals, when the pupil helps to correct them, and when he thoroughly understands them. If they enable him to measure his progress and test his skill they are inherently interesting unless the subject they cover is so far from his interests as to be objectionable. Recent studies [1] show that a knowledge of the results of tests stimulates pupils to higher levels of achievement than ignorance of either success or failure. Self-checking or self-marking tests, in the use of which pupils do their own scoring, give an added stimulus to an interest in tests.

Tests largely motivate themselves when they are fair and objective and cover interesting subject matter.

Getting pupils ready for a test. It is rather unusual, although perfectly logical, to make an assignment for a test just as carefully as for any other exercise. Such assignments should make clear to the pupils just what the test is to cover and how to prepare for it. This does not imply that pupils are to be coached for tests but rather that when tests are to be given they know the field to be covered and the type of test to be given. The practice of giving tests

[1] BOOK, W. F., and NORVELL, LEE—"The Will to Learn." *Pedagogical Seminary*, XXIX (1922), pp. 305–62.

without warning and with no specific assignment for review and preparation tends to develop a dislike for tests among pupils sooner or later, for without preparation they do not have a fair chance. Crawford [1] believes that the general principle of studying for a specific purpose is also applicable to preparing for tests and examinations. He says:

> It is hardly fair to have to prepare for a test when you have no idea what its nature is to be, to say nothing of the wastefulness of such aimless preparation.

Preparation for tests should include a systematic review of the materials to be tested. This review should be carefully directed. The teacher may suggest methods of work, relative emphasis on different items, and types of response to be required. Pupils may then prepare themselves adequately and success, in a large measure, is insured. The test thus has its value in motivating and directing learning. Adequate assignment in preparation for the test lesson is a characteristic of good teaching.

Administering tests and examinations. The recitation activities of a testing or examination period may be enumerated as announcing the test, preparing the pupils to take it successfully, controlling the time, distributing the tests, supervising the taking of the tests, correcting the papers, and arranging and interpreting the results of the test. All or part of these activities may occur in any given testing or examination period.

The announcement of the test ordinarily should have occurred at a previous period and children should have prepared for it. At times, the test may be unannounced and given without previous preparation. The latter type of test is frequently used as a means of keeping pupils keyed up to

[1] CRAWFORD, C. C.—*The Technique of Study*. Houghton, Mifflin, 1928, p. 272.

their best efforts and is a legitimate use of testing if not overdone. It is also frequently used as a means of finding out what children know or do not know about the subject in advance and as a preliminary to diagnostic and remedial instruction.

Preparing the pupils to take the test includes the reading or giving of directions, the administration of the fore-exercise, if any, and the answering of any questions that may arise in the minds of the pupils with respect to the mechanics of the test. Enough time should be taken to make the test mechanics clear so that no child may fail because he does not understand the directions.

Distributing the tests is sometimes an important matter and requires that precautions be taken so that pupils who are too eager will not read the material or mentally or otherwise perform some of the exercises before the teacher is ready to call time. Sometimes this requires careful arrangement of the tests in packages that will facilitate their distribution and care in training monitors to aid with the distribution of the material face down on the desk.

Controlling the time of the test is a very important matter in the use of standardized tests where a time limit is imposed. The teacher must have exact knowledge of the directions of the test and have either a watch with a second hand or a stop watch to use in controlling time. Scrupulous care must be used in starting and stopping on time and seeing that no pupils exceed the time allowed.

While the pupils are performing the test, the teacher must supervise the work to prevent waste of time, dishonesty, etc. Probably there is no teacher clever enough to prevent dishonesty entirely, but every teacher should try to make cheating and distractions rare. Control of heat, light, and ventilation during long testing periods is important. The

teacher should try in every way so to conduct the test period that all pupils work steadily and without interruption.

The problem of what to do after time has been called and the tests are ready to be corrected and interpreted is so important as to merit special attention. It is now common to engage the pupils in this activity and train them to do the necessary detailed work. The teacher must have a certain amount of technical information and skill in order to do this successfully. Enough of this information will be given here to enable the student to understand a class exercise in which teacher and pupils are studying the results of tests.

The conditions essential to the actual taking of tests should have been described in detail before they were administered. These conditions involve in part, stating the nature of the exercises, the number of items or elements in the test, how they are to be checked or marked by the pupils, the time allowed, the method of proceeding without unnecessary delay, and whether guessing is or is not permitted. It is usually advisable to work out a sample exercise with pupils before urging them to launch into the test proper. This practice orients them correctly from the start and, oftentimes, prevents them from making unnecessary mistakes. At the very beginning, the teacher should emphasize the importance of the test as a unit, so that pupils will not take it too lightly and, as a consequence, fail to make a good showing. The way in which the examination is conducted will largely determine the nature of the attitude which pupils will eventually take toward testing as an activity. In case the test or examination is a standardized form, written directions must be strictly adhered to, but with teacher-made objective tests it will be found necessary and advisable to supplement the printed directions by oral explanations, unless an unusual amount of care has been taken in prepar-

ing them. Even then, some oral instructions may be necessary to make clear the nature of the performance required of the pupils.

The practice of using the recitation for scoring tests is sometimes advisable, and it often aids in the development of a more friendly attitude among pupils toward them. This can be done by supplying pupils with an answer key and having them score their own tests or one another's, or the teacher may dictate the correct answers and have pupils mark their own tests. If the practice is engaged in, the teacher should recheck all tests marked by pupils in this manner.

Studying the results of tests and examinations. The results on any tests or examinations depend upon the validity and reliability of the tests which have been administered. Several elements go into a good test: validity, reliability, and ease of scoring. The validity of a test depends upon whether or not it measures what it purports to measure. Its reliability depends upon whether it measures consistently what it measures. The latter depends upon the number of items in the test and the number of times it has been given. In interpreting a test, therefore, if it is a test which the teacher has not made herself, she needs first to ask:

1. Is this a real test of the subject or the skill to be measured?
2. Is the test long enough to be reliable?

Validity. Does the test measure those items which are important in the subject? If not, it is not a good test and the results may be dispensed with as insignificant. Some tests have a discussion of their validity in the test manual. Other tests are highly recommended by experts. The teacher's informal test may be submitted to other teachers and its validity judged by them. Pupils may be asked to pass on the validity of the test.

Reliability. In order to be reliable a test must have a sufficient number of items in it to give a stable result; *i.e.*, it must measure consistently what it measures. There must be certainty that if twice as many items were given the pupils would tend to rank as they are ranked by the test. Experts have determined that to be reliable an objective test should contain at least forty or fifty items. Double this number is preferable. The larger the number of items in the test the more reliable it is. If a number of short tests must be used, the reliability of the tests can be increased by treating them as a whole, as will be explained later.

Scoring the tests. When tests have been administered the duty of arranging them and scoring them faces the teacher. When administering objective tests, she should make use of the pupils for this purpose. Scoring the tests furnishes an interesting and profitable class exercise for children. The teacher may read from the answer key and pupils may correct one another's papers; or, if preferred, each pupil, using a scoring key, may correct his own test. The latter method is a good one to use as a means of training pupils to understand the real purpose of tests and to become interested in correcting their own errors rather than merely looking for a mark.

Determining point scores. The plan of evaluating scores on teacher-made objective tests or on standardized tests need not be involved for ordinary school purposes. It is sufficient to count each correct response, best response, correct association, or correct identification made by pupils as one point; and, in case of alternate-response and multiple-response exercises, one point may be assigned to each wrong response or error. The number of wrong responses may then be subtracted from the number of right responses to penalize for guessing. This practice is a variable one among teachers.

Some teachers prefer to use one of the following formulas: $(R - W)$; $\frac{(R - W)}{2}$; $\frac{(R - W)}{3}$; $\frac{(R - W)}{4}$; depending on whether the test is composed of questions or statements requiring one correct response; or one best or correct response out of two, three, or four possible responses. But many teachers are not interested or concerned about guessing unless the test is to be employed for diagnostic purposes. In most instances, teachers are interested in learning how much actual progress pupils are making, as indicated by the number of questions or statements which they get correct on a given test. The matter of penalizing for guessing on tests is an optional one. It need not be strictly adhered to. Many standardized tests do not have this requirement for scoring. Nor do questions need to be weighted for ordinary purposes. This practice is involved and is unnecessary. The number of items in a test, however, is a serious matter.

A convenient way of scoring. It is important that teachers understand a practical and convenient plan of scoring tests. There are several ways by which test scoring may be simplified. Some teachers prefer to construct their tests or have them made so that the answers to the questions will be indicated by the pupil in the left-hand margin of the page. Then the answer key can be made from a copy of the test by indicating the correct answer or response in a manner identical with that indicated by the pupil on the test. The key may then be folded or cut so that it may be conveniently placed over the test with the answers on the key corresponding to the answers made by the pupil on the test. The correct or incorrect answers are readily marked by a pencil—preferably a colored one—and the points totaled in a brief time. However, this method of scoring is awkward for right-handed people. A more convenient way to facilitate scoring tests

is to construct them, or have them constructed, so that all answers will be indicated by the pupil in the right-hand margin of the test page. Then the answer key may be made from a copy of the test as indicated above and manipulated so that the answers of the scoring key will correspond to those indicated by the pupil when it is placed over the test. This method of scoring tests is convenient for right-handed people and is more practical than the other method mentioned above. Samples of these two methods of scoring are given here for study.

THE AWKWARD WAY		THE CONVENIENT WAY	
Test Paper	*Answer Key*	*Answer Key*	*Test Paper*
—1. Trade tra	—1. Trade tra	Greek education. 1.—	Greek education. 1.—
—2. The Romans	—2. The Romans	on in education. 2.—	on in education. 2.—
—3. Pestalozzi	—3. Pestalozzi	rn educational	rn educational
practice.	practice.	.... 3.—	.... 3.—
—4. Transfer fro	—4. Transfer fro	ary school in	ary school in
Europe is diffi	Europe is diffi	.... 4.—	.... 4.—
—5. Secondary edu	—5. Secondary edu	more largely	more largely
privately con	privately con	.... 5.—	.... 5.—

Making the answer key. The answer keys are made from copies of tests. They are to be placed over the test paper so that the symbols (zeros, pluses, minuses, etc.) of the keys correspond to these on the tests, and then the items which are either correct or incorrect can be check-marked. The same plan can be used in scoring multiple-response tests. But the responses will have to be indicated by small letter or arabic numerals and directions given to explain that the correct response is to be put in the blank space at the right of the page. There are, of course, other methods of scoring test papers, but many of them entail a great deal of extra work for the teacher.

Distributing test scores. In order to interpret the results of tests, it is necessary to arrange and distribute test scores. This simply means that scores must be arranged in order, beginning with the highest score and going down through

the papers to the lowest score. Such a table of scores is called a distribution table. The following illustrates two types of such tables.

TABLE I

FREQUENCY DISTRIBUTIONS

Example 1		Example 2	
Scores	*Frequencies*	*Class Intervals*	*Frequencies*
30	2	29–30	3
29	1	27–28	5
28	2	25–26	10
27	3	23–24	18
26	6	21–22	16
25	4	19–20	7
24	8	17–18	6
23	10	15–16	5
22	7		70
21	9		
20	5		
19	2		
18	5		
17	1		
16	2		
15	3		
	70		

Example 1 shows the distribution table with each score tabulated separately; Example 2 shows a table with the scores grouped into intervals of two. There are also other forms of distribution tables, but the chief difference is that the more complicated forms express the class interval as extending from the limits of one interval to the next; for example, from 15 to 16.9; 17 to 18.9, etc. The term *frequencies* represents the number of pupils who have a given score. When a table of such scores has been made, it becomes

necessary to interpret these scores. In order to do that, the average, median, and some measure of spread or dispersion must be found. The finding of these measures will now be explained. The teacher commonly finds these measures herself, but there is no reason why an interesting exercise in arithmetic may not be presented to children in intermediate grades and above by having them find these measures. They may also be taught to graph the results.

The average or mean. The average score is a measure by which we express the central tendency of the distribution; that is, we tell how the scores tend to run in general. Another measure for this purpose is the median. Both of these measures will be explained. The average is so familiar to both pupils and teacher that little explanation will be required. The common method of finding the average is to divide the sum of the scores, by the number of cases. When each score has more than one frequency use the following method:

1. Multiply each score by its frequency.
2. Sum these products.
3. Divide this sum by the total number of scores.

The median. The median is a measure used for the same purpose in general as the average but it is easier to find. It is sometimes identical with the average but generally is slightly different. It is found by beginning either at the top or bottom of the distribution and counting until the midpoint or mid-score is found.

The standard deviation. The standard deviation is a measure of variability most commonly used. In obtaining it, the deviations are squared and multiplied by the frequencies before being summed. The sum is then divided by the number of cases, and the square root extracted of the quotient. It is a measure that is necessary in determining

a scale for transmuting numerical values into letter grades. The following illustration will show how the standard deviation is obtained for the data in Table I and how a scale is derived from its use. The student should study through the example to obtain an idea of how such a scale is derived.

First, determine the size of the class interval that is most desirable to use for the particular distribution under consideration. The class interval in Table II is two. Second, count the class frequencies. They are given in the second column of the table below. The sum of this column is the

TABLE II

CALCULATION OF STANDARD DEVIATION WITH CLASS INTERVALS AND ARBITRARY ORIGIN

Class Intervals	*Frequencies*	*Deviations*	*Frequencies × Deviations*	*Frequencies × Deviations Squared*
29–30	3	4	12	48
27–28	5	3	15	45
25–26	10	2	20	40
23–24	18	1	18	18
			65	
21–22	16	0		
19–20	7	−1	−7	7
17–18	6	−2	−12	24
15–16	5	−3	−15	45
	N 70		−34	227

$$\text{S.D.} = \sqrt{\frac{\text{Sum FD}^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2} \times 2 = \sqrt{\frac{227}{70} - \left(\frac{31}{70}\right)^2} \times 2 =$$

$$\sqrt{3.05} \times 2 = 3.50$$

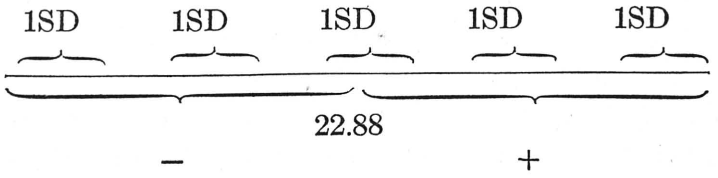
number of cases, N, which is 70 in the illustration. Third, assume an arbitrary origin somewhere in the middle of the range of the distribution. In the example, the class interval, 21–22, represents the arbitrary origin and is labeled zero. This point is usually somewhere near the mean but it can be located anywhere on the scale without affecting the accuracy of the calculations. The class intervals higher than the zero interval are designated as positive deviations and the intervals lower than the zero class interval are designated as negative deviations. Fourth, the data in columns four and five of Table II are self-explanatory.

Since the class interval of the data in Table II is 2, the standard deviation in terms of class intervals will be 1.75 × 2 or 3.50. The computed mean of this array of scores is 22.88. These measures determined, it is now possible to use them in obtaining the desired number of letter grades.

The mean, which is 22.88 in the illustration, represents the mid-point of your scale of markings. If you desire to employ a five-fold distribution of letter grades, it will be necessary to mark off five segments on a line representing a scale or measuring stick as follows:

F's	D's	C's	B's	A's
		22.88		

In order to find the number of letter grades, the scale must be divided into five standard deviations as in the diagram below.



Now we have divided the scale into five parts each of which represents one S.D. But in order to find the scores which are contained within these divisions, we must add and subtract our S.D. from the mean of the distribution. In the illustration the mean is 22.88. You will notice that we must add two and one half S.D.'s to the mean and subtract two and one half from it in order to obtain the complete range of the scale. This requires that we first add and subtract one half S.D. from the mean to get the middle segment of the scale. Subtracting one half S.D., or 1.75, from the mean we get 21.13. Adding one half S.D. to the mean we get 24.63. Within the range of these two points, the C-grades fall. Referring to Table I, you will notice that there are 34 cases or scores which fall within the range of 21.13 and 24.63. You have therefore 25 C's in your distribution of marks.

In a similar manner you add and subtract the S.D.'s until you have completed the scale as illustrated below.

6 F's　　21 D's　　25 C's　　15 B's　　3 A's

22.88

14.13　　17.63　　21.13　　24.63　　28.13　　31.63

Referring again to Table I, you will see that by counting the number of cases between each of the above scale points, you will find the number of letter grades to be assigned to the 70 pupils in the example.

This method of transmuting scores on tests to letter grades has practical significance to teachers. Either it or some other scale should be employed to give greater objectivity to teachers' marks.

Using the results of tests. When the data indicated in the previous discussion have been worked out, the teacher

is in a position to discuss the meaning of results with children. The marks can be explained on the basis of the distribution of scores. Each test item may further be studied in terms of the number of errors made on the item and diagnostic work may be followed by remedial teaching. Often an entire recitation may profitably be devoted to a study of the results of either a standardized or a formal objective test. This procedure will make pupils aware of their weaknesses and improve their efforts. The progress of the class may also be shown from time to time by showing the gain made from one test to another. Tests may also be used to acquaint the pupils with the minimum essentials of the subject. It is only when follow-up of this character is used that tests and examinations justify the time and effort spent in making and giving them.

The outcomes of tests and examinations. The outcomes of any practice naturally reflect the functions of that practice. This is as true for one form of activity as for another. The reader can obtain, in a sense, a pre-view of the results of the use of examinations by turning back to the discussion of the purpose of testing. Moreover, there are always additional and concomitant learnings which result from a well-planned and organized procedure of doing things. These will be listed with other outcomes of tests and examinations here:

1. Friendly attitudes among pupils toward tests
2. Satisfaction from using tests to improve learning conditions
3. Enthusiasm for tests aroused through motivating activities included in a testing program
4. Interest in other activities resulting from taking tests
5. Improvement of language usage
6. Pride in accuracy and neatness
7. Skill in answering questions and statements

8. Satisfaction resulting from developing abilities to spell correctly, to write legibly, to pronounce and enunciate distinctly in dictation exercises
9. Satisfaction resulting from the use of an objective marking system

Summary. One of the most important functions of the teacher in using tests and examinations is to develop among pupils a friendly attitude toward them. The teacher has, of course, many other responsibilities with respect to testing, but this one should supersede all others until pupils have learned to like and to respect the test program as they have learned to like and respect other classroom activities. The extensiveness of tests in their various aspects, as to form, type, content, and organization, is such that the teacher has a wide variety of interesting sources for creating and cultivating a wholesome attitude among children for them. This means, among other things, that teachers must be efficient in constructing informal objective tests, as well as skillful in selecting suitable tests, administering, scoring, and interpreting them, and in presenting their results in a pictorial way to pupils. A knowledge of the best type of test to employ, what functions are involved, what materials are to be emphasized, how to construct simple types of informal objective tests, and how to use such mechanical devices as the hectograph and the mimeograph in printing them, are essential pre-requisites for carrying on an effective testing program for improving classroom instruction.

STUDY QUESTIONS

1. What phases of tests and examinations were emphasized in this chapter?
2. What are examples of tests as to purpose? Organization? Mental functions involved? Abilities included?
3. What purposes of tests mentioned in the chapter are prima-

rily concerned with improving learning conditions in the classroom?

4. What purposes are largely teacher purposes? What ones are pupil purposes?

5. Why is it important that the teacher construct informal objective tests?

6. How may one determine what test will be best adapted to a given unit of material?

7. What is an example of a unit of material to which the following types of objective tests may be readily adapted: matching tests, identification tests?

8. What can be done about testing in order to arouse interest among pupils for the practice?

9. What is the significance, if any, of employing the same general procedure of testing as of teaching?

10. What are the conditions in testing that usually lead to cramming?

11. Why might it be an advantage to teachers to learn to use tests before learning to construct them?

12. What are several conditions which should be carefully adhered to in conducting a testing program for improving instruction?

13. Why should children be given a great deal of opportunity to take tests and to become familiar with their usefulness?

14. What statistical devices are essential to the interpretation of the results of tests?

15. What is the chief value of a standard deviation scale in interpreting scores?

16. Why should the teacher learn to employ statistical techniques in determining letter grades from numerical values?

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PART III

TECHNIQUES AND ACTIVITIES OF LEARNING

Basic to all effective teaching is a thorough understanding of the activities and techniques of learning. The teacher in the modern school is a director and supervisor of learning. Any teaching situation is certain to be fundamentally concerned with a complex learning situation which demands careful analysis if it is to be directed successfully. Any given situation, however, is complex. It may involve any or all the basic types of learning treated in the following section. It is convenient for the purposes of exposition to divide learning, then, into types and to discuss each type separately. At the same time, the student should be observing learning situations as nearly typical as possible of the special types of learning discussed, and seeking to understand the fundamental principles governing the activities and techniques of each.

CHAPTER XIII

Observational Learning

Introduction. Observational learning constitutes an essential phase of the learning process in all fields of study and in all grades of instruction. It is the most natural way of obtaining information about concrete objects and events of real life; it is more fundamental and basic than the more artificial processes of reading and studying. It is unfortunate that learning through nature's avenues, the senses, is largely left to chance as soon as children have developed some ability to deal with abstract ideas or have mastered a little of the mechanics of the language. Direct observation should not be limited to special fields of study and to the primary grades. The practice should be extended and continued in all stages in the development of the individual. The purpose of this chapter is to set forth some of the important factors concerned in training children to be observant in getting and recording experiences.

Observation is natural but must be directed. Observation is a method of sensorial learning through which the individual acquires knowledge of the world about him. Through the receptors of hearing, he identifies and recognizes sounds; through the receptors of sight, he becomes acquainted with and aware of distances, form, size, and color; through the receptors of his skin, he becomes aware of pain and temperature (coolness, warmth); and through the receptors in the muscles and in the joints, he becomes conscious of pressure. To this list of avenues of learning, there may be added others located in the mouth and nose,

through which the individual acquires information about tastes and odors.

A child has had an important type of experience before he enters school. This experience has furnished him with a background of observational experiences with which the teacher should become familiar as early as possible. It is surprising how great or how meager this stock of observational material may be upon the child's first entrance to school. The more intelligent children will have a large stock of information because they are more alert to their surroundings than the less intelligent. The less alert and more stupid ones will have a meager stock of information, irrespective of the richness of their environment. They are usually less observant of their surroundings. It is never safe, therefore, to assume that children have an adequate stock of observational experiences when they attain school age. The teacher must take an inventory of their equipment to discover what is lacking and what needs revising. Incidental and undirected contact with one's environment does not guarantee adequate experiences. Directed education must enter the rôle of observational learning and organize it in a systematic way for future use. It is often true that much of children's observation out of school is incoherent, lacking in unity, and often very inaccurate. This condition makes it all the more necessary for the teacher to take an active part in building up an adequate stock of observational experiences.

Direct and indirect experience. Observation as a method of experience getting may be classified into two types: (1) direct and (2) indirect or vicarious. The former type consists of sensorial experiences which one gets when he is in the presence of the real object or happening; the latter type may be obtained in a vicarious manner through

reading and listening to stories told by those who have had real experiences. The sensorial type of experience getting is excellently illustrated in Kipling's story of *Kim*. Kipling records, among other things in this interesting story, Kim's experiences of sightseeing in Lurgan's pearl-mending shop. Here, as the story goes, Kim is bewildered as he peers about the masses of oriental curiosities, such as pearls, vases, unique stones, jewelry, mechanical toys, and other curios. The boy's observation is undirected and therefore ineffective as compared with directed observation of a skilled observer. Another capital illustration of this type of experience is to be found in a group of realistic stories, entitled "Evenings at Home" by Dr. John Aiken and Mrs. Anna Barbauld. The story, "Eyes and No Eyes," gives an interesting contrast between the observations made by two boys who went out walking one afternoon for amusement. The one boy sees practically nothing. The other boy marvels at the wonder and beauty of the many interesting things of nature. He uses his eyes. He is observant in this sense. This illustration is important in its implications of the effectiveness of observation resulting from undirected training. The difference between the observations made by the two boys is largely due to the difference in habits of observation which they had previously cultivated. The fact that the one boy could recall much that he observed, while the other boy could recall scarcely anything from his trip, is good evidence that the former was actively aware of his surroundings. But the fact that the latter could recall very little from his walk is not good evidence that he observed nothing. He may not have been actively aware of his environment but he learned just the same through indirect experiences with nature. His observations are nonpurposeful as compared with those of the boy who was ap-

parently actively awake to his surroundings. Much of our learning is similar to that of the boy who was wide awake to his environment. Nevertheless, we learn an immeasurable amount from undirected and non-purposeful observation. It is always easier to detect those aspects of their environment of which children are actively aware than it is to discover what they indirectly acquire through their surroundings.

The value of observational learning. Observation is both a means to an end as used by the teacher and an end in itself as viewed by the pupil. In either case, it should be directed or purposeful to be effective. To the pupil, observation is a means of getting information, collecting data, and getting accurate ideas about things and events. To the teacher, observation gives an opportunity for training the pupil to gather data. She is interested in developing the abilities involved in observation, as well as in enlarging the child's experiences. Observation as directed learning is controlled and leads to the development of accurate habits of study and thinking, while undirected observation is uncontrolled and leads to random experiences which are essential only if one is passing away an hour in a leisurely manner. In this latter instance, observation is usually unreliable, for the activity is non-purposeful. The learner is not analytical in his observations. He is amusing himself. Observation has social value for him. Purposeful observation is characteristic of directed observation. Skill gained in this way may be expected to improve the ability of children to add to their fund of general knowledge. They will be interested if they learn how to observe successfully and if the objects of their observations seem significant to them.

The fields of observational learning. Subject matter for observational activity need not be limited to any particular

field of study. Wherever pictures, graphs, charts, persons, objects, events, and processes of any type are to be found, observational study is involved to a greater or less degree. Some types of materials, however, are more suitably used for early training in observation than others. Out-of-class events and happenings furnish excellent material for children to observe and report in class. In fact observational work can be effectively initiated by utilizing these activities among the children of the lower grades of the school. Telling about things which children see in their home environment constitutes a worth-while activity for classroom work and should be encouraged. This practice may be extended as children develop power to observe from year to year. Older children are usually more capable of recalling their experiences in detail than younger children and, as a result, they are less liable to err in making observations. The more practice children get in recording observations, the more accurately they will report on them later. Projects of all sorts, such as may be developed in geography, history, and nature study, lend themselves readily to observational learning. Trips, excursions, and visits to local or distant places of interest come under the same category of activities and furnish an abundance of material for observational training. Careful and accurate observation is an absolute requirement in many of the science subjects, especially in the field of chemistry. It should also be made a requirement through training in all the other subjects of the school curriculum.

Interest in observation and how to get it. Interest in observational activities depends largely on the nature of the objects, persons, or things to be observed, their novelty and their appeal to children. A trip to a local factory or museum may be more interesting than pictures and printed pages of books and magazines, or even some of the more

familiar objects in the pupil's immediate environment. The very fact that there is always a certain amount of fascination associated with visiting local places of interest is sufficient in itself to stimulate observation. In addition, when children know that they will be required to give an account of their observations later in class, they seem to enter into the activity with greater zeal and zest than they would otherwise. The sample check-list given under the section dealing with recitation activities illustrates how children may be held to account for their observations. It will often be found practical and valuable to motivate their observations by asking a few guiding questions or by making suggestions about the materials to be observed. A check-list, such as the following, will tend to arouse children's enthusiasm to observe things in nature.

How Much Do You Know about Nature?

Directions. Draw a circle around "YES" if you believe the statement or question is TRUE, or draw a circle around "NO" if you believe it to be FALSE.

1. Our first bird visitors from the South in the spring are the robins and the meadowlarks.	YES	NO
2. Crows remain with us throughout the winter.	YES	NO
3. Wrens come North in the spring before the robins do.	YES	NO
4. Birds sleep in thickets.	YES	NO
5. Robins eat earthworms.	YES	NO
6. All birds sleep standing up.	YES	NO
7. You can tell a meadow lark by its song.	YES	NO
8. An oriole is the same color as a crow.	YES	NO
9. Catbirds are beautiful singers.	YES	NO
10. These birds remain with us throughout the winter: sparrows, crows, owls, hawks.	YES	NO
11. The blue jay, mocking bird, thrush, and grosbeak are all large birds like the crow.	YES	NO

12. Dandelions are among the first weeds to flower in the spring	YES	NO
13. Violets bloom until fall	YES	NO
14. Trailing arbutuses are usually found in wooded land	YES	NO
15. Are crocuses early spring flowers?	YES	NO
16. Does the groundhog go South for the winter?	YES	NO
17. Do frogs croak in the fall?	YES	NO
18. Frogs live in ponds	YES	NO
19. A tadpole is a young frog	YES	NO
20. Frogs and toads live together	YES	NO
21. Bumblebees have feathers	YES	NO
22. Humming birds are very large	YES	NO

Children will enjoy answering a list of statements and questions as indicated in the check-list above. Their desire to find something definite and novel in their study will be satisfied in this practice. Growing power to observe accurately will tend to stimulate further activity.

Directing observation. Since observation is more effective when directed than when undirected, the assignment should be designed to get pupils to observe things accurately and to record their observations in some systematic manner. A good set of direct questions about things and objects to be observed, whether they be real things in children's environment or just pictures in books and magazines, will aid greatly in directing their efforts in observing the essentials of the objects and processes observed. Direction exercises of the type commonly used in reading will also be found useful in getting children's attention focused on the significant things under observation. Check-lists and observational outlines will be found invaluable for this purpose. A sample of the multiple-response type of check-list will illustrate how children's attention may be directed to the important phases of their observations.

A Check-List for Guidance in Making One Kind of Observation

Directions. Draw a line under the word or words which describe what you are to observe.

1.	a. printed materials b. objects c. persons	d. animals e. birds	f. insects g. plants
2.	a. museum b. grocery store	c. factory d. library	e. nature
3.	a. books b. magazines	c. bulletins d. circulars	e. newspapers
4.	a. words b. sentences	c. paragraphs d. chapters	
5.	a. pictures b. charts	c. graphs d. maps	e. statistical tables
6.	a. number of pages in books b. tables of contents	c. indexes d. bibliographies	
7.	a. main captions b. titles of paragraphs	c. titles of chapters d. summaries	
8.	a. questions asked b. questions answered	c. important facts d. test and study questions	e. type examples
9.	a. reference books b. reading guides	c. library cards d. library files	e. other library equipment
10.	a. how to gather facts b. how to record them	c. how to organize them d. how to interpret them	

This check-list is suggestive of a technique which the teacher may use to an advantage in directing children's observations. It will be found a valuable aid in getting the assign-

ment under way. There are other methods of organizing materials in check-lists. One may construct any number of forms, such as direct questions, identification exercises, alternate-response exercises, or any other which may be readily adapted to the materials under consideration. The alternate-response, the direction questions, and the multiple-response exercises will be found most practical to construct for directing children's observations. Usually, such exercises as these tend to motivate children's observations, as well as to make clear and definite the objects, persons, or things to be observed.

Class activities. The commonest type of recitation activity preceding and following an observation is a socialized recitation, including questioning, answering, and discussion by the pupils and teacher. This discussion should serve to orient pupils in their observations and to correct mistaken impressions, as well as to bring out the salient points of the objects or processes observed. A concrete illustration of an observational project will make clear a type of activity that may profitably be engaged in by the class.

A Trip to a Grocery Store

The teacher and pupils plan a trip to a local grocery store. The assignment gives the necessary directions to call children's attention to the things to be observed. The visit to the store takes place; children observe objects, both the familiar and the unfamiliar; they ask questions and receive answers from their teacher; and, after a period of time, they return to the classroom with a great deal of enthusiasm about the things which they saw at the store. Since the visit will consume more time than the regularly scheduled class period, the discussion is held over until the following day. Then the teacher may use the plan [1] suggested below in conducting the recitation.

[1] YOAKAM, G. A.—*Reading and Study.* Macmillan, 1928, p. 317.

Questions for Class Discussion

1. What things did you see at the grocery store?
2. What are scales?
3. What does the grocer do with the scales?
4. What things can you buy at the grocery store?
5. How does the grocer send things to your mother?
6. Can you buy potatoes, peas, cakes, soap, sugar?
7. Can you buy a dress at the grocery store?
8. How do you get things at the grocery store? Does the grocer give them to you?

These questions may either be written on the blackboard or dictated to the children for answers, or they may be used to initiate class discussion. This will be a matter to be determined by the needs of the class.

The recitation may continue by getting children to classify the materials which they observed at the store in the following manner:

Cereals	Fruits	Flours
1. corn flakes	1. apples	1. wheat
2. grape nuts	2. pears	2. graham
3. puffed rice	3. peaches	3. rye
4. rolled oats	4. plums	4. rice
Sugars	**Spices**	**Vegetables**
1. maple	1. pepper	1. potatoes
2. granulated	2. allspice	2. turnips
3. pulverized	3. mustard	3. carrots
4. cane	4. ginger	4. parsnips

The teacher may write the headings of this chart on the blackboard and have the children help her to classify the various items under their proper captions, or she may have the headings mimeographed on a sheet of paper and have the children put the various items in their proper places on the chart.

This exercise may be followed up by having children make a résumé of their observations in written form, or their observations may be written on the blackboard or hectographed in the form of a chart for further study. Often a multiple-response exercise such as the following will prove helpful in getting children to recall their observations:

1. The grocer sells: (1) shoes; (2) bicycles; (3) nails; (4) potatoes; (5) clothing.
2. The grocer measures sugar with: (1) a sack; (2) a scale; (3) a cup; (4) a scoop; (5) a tin can.
3. The city people buy things at the grocery store with: (1) jewelry; (2) bonds; (3) scrip; (4) money; (5) furs.
4. The modern grocer sends things to your home by: (1) horseback; (2) wheelbarrow; (3) bicycle; (4) automobile truck; (5) horse and wagon.

An almost limitless number of things can be done to have children tell about their visits to local places of interest. It is more or less obvious that such training is fundamental in getting children to utilize their everyday experiences in developing ability to observe more keenly the things in their immediate environment.

The need for controlled practice. Inexperience is usually the cause of erroneous observation, except in cases where the events are too complex or too brief in duration. This suggests the need of controlled practice in observing objects and processes. Experimental evidence confirms the presence of errors in observation in practically every field; for example, to quote from Gates: [1]

A brief scene involving a quarrel which had been carefully rehearsed was performed before a group of forty professional men.

[1] GATES, A. I.—*Psychology for Students of Education.* Revised edition. Macmillan, 1930, pp. 2–3.

Believing the quarrel to be genuine and anticipating the use of their testimony in court, the witnesses immediately wrote out a full account. Thirteen of the forty observers failed to record as much as half of the important events and the others omitted from one fifth to a half of them. Even in these apparently conservative reports, from five to fifty per cent of the statements were erroneous.

Even when the surprise and possible emotional disturbances are eliminated by warnings and instruction and when the observers are aware of the amount and kinds of errors usually made in such tests, glaring omissions and errors occur. When the object of observation is a still picture, a mechanical device, or even a postage stamp, the unreliability of ordinary observation is still apparent.

That ordinary observation of objects and events is usually very unreliable is well illustrated by the example just cited. Since the unreliability of professional men's ordinary observations is as great as indicated in this particular experiment, one can only infer that children's ordinary observations would be much less dependable than those of the group of professional men. This evidence, while not conclusive, should prove helpful to teachers who are interested in training children to be accurate observers. It is very important that teachers become conscious of children's failure to report accurately their observations of the most common things in their environment. To be effective, observation must be trained. One may be an accurate observer in one field but poor in another. This condition is due to the fact that the character of events in the one field of study is not always identical with that in another. Poor observers are inaccurate mainly because they either lack experience or anticipate results. Oftentimes the repetition of observations by the same or different observers is helpful in correcting errors due to haste or inexperience or both. Other things being equal, the pupil who has a definite purpose will observe much more than the one who has none.

The untrained, non-purposeful pupil will have much difficulty in making accurate reports on his observations.

Checking results by check-lists. Since there are many types of observations which a student may make, it will be necessary to have several different kinds of check-lists to evaluate them. For example, one may visit a museum and observe the great variety of natural, scientific, and literary curiosities. Or he may visit a grocery store and observe the many different kinds of vegetables, flours, fruits, sugars, spices, and a host of other food products. Or he may be interested in observing reading materials, such as books, magazines, encyclopedias, reading guides, or events and happenings either in a direct or in a vicarious manner. But each type of observation will call for a check-list of items entirely different from the other. No one check-list will do for all these different types of observation. A more or less specific form will be necessary for each type of observation. One such check-list may be made out for observing a particular kind of reading material in the following manner.

A Student Check-List for Evaluating Observation of a Book

Directions. Draw a circle around "YES" if you can answer a question about a book which you observed, or draw a circle around "NO" if you cannot.

1. Did you observe the title of the book?........... YES NO
2. Did you learn the author's name?.............. YES NO
3. Did you note the color of the back of the book?.. YES NO
4. Did you find out how many pages were in the book? YES NO
5. Did you observe whether there was a table of contents?...................................... YES NO
6. Did you observe how many chapters it contained? YES NO
7. Did the book contain an index?................ YES NO
8. Did it have a glossary?........................ YES NO
9. Did it have a bibliography?.................... YES NO

10. Were the references annotated? . . . . YES NO
11. Was the bibliography located at the end of each chapter? . . . . YES NO
12. Did you read the preface? . . . . YES NO
13. Did you learn the purpose of the book? . . . . YES NO
14. Did it answer questions about history? . . . . YES NO
15. Did the book have study questions? . . . . YES NO
16. Did it have graphs, charts, maps, or tables? . . . . . . YES NO
17. Did it have pictures? . . . . YES NO
18. Did it contain summaries? . . . . YES NO
19. Could you tell in a general way what the main captions of the chapters were? . . . . YES NO
20. Did the book appear to be easy to read? . . . . YES NO

The use of recall and recognition tests. Ability to observe and to recall what one observes may be measured with considerable degree of satisfaction by recall and recognition tests of the objective type. These tests may be made up in the nature of identification, multiple-response, and limited-recall exercises such as are illustrated below.

Identification

Properly classify under each of the following headings the articles which are listed below.

Vegetables	*Fruits*	*Spices*	*Flours*	*Cereals*
1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.
Rice flakes	Carrots	Potatoes	Apricots	Plums
Graham	Pepper	Puffed wheat	Rolled oats	Ginger
Pears	Rye	Wheat	Cloves	Beets

Multiple-Response

Which of the following articles could be purchased at a grocery store? (Draw a line under correct answers.)

1. Vegetables 2. Shoes 3. Fruits 4. Spices 5. Nails

Limited-Recall

What are three articles which you observed at the grocery store?
1. ______________ 2. ______________ 3. ______________

These objective tests should be supplemented by oral and written reports of children's observations. Recall tests are usually effective in getting a check on the accuracy of observations in detail. For this reason they should be used more extensively than other types of tests. The amount and accuracy of recall are in direct proportion to the accuracy of observations. That is, other things being equal, the more accurately the details are noted in observations, the more accurate the recall of them will be. Regardless of the type and nature of the test employed, it should be borne in mind that tests of ability to observe will be based on the purpose for which the observation was made. Directed observation should be measured in order to diagnose weaknesses and to arrange exercises for improvement.

Important outcomes of observational learning. Observation is itself indispensable in all kinds of learning, whether directed or undirected. But it is more effective when controlled. The aims set up will determine the outcome. It is important that pupils be trained to observe accurately; that they learn to pick out the essential and relevant things; and that they develop ability to report what they have observed without making gross mistakes. Ability to remember what is observed is important, as well as the habit of observing and being interested in persons, processes, objects, and events. If children are taught to observe keenly, the teacher will find that they will be able to tie up what they read about to real life in more effective ways. The observation exercise should be regarded primarily as a means of training children to observe things accurately

and to retain those experiences that are valuable for future use.

Summary. Observation is a form of experience getting. It may be direct if real objects and events are available, or it may be a form of vicarious experience getting, as reading and listening to stories told by those who have had first-hand experiences. In either case, observation should be directed to be purposeful. If it is not controlled, it will be random and ineffective, and will be used fundamentally for amusement only. Observation should be utilized in all fields of study and in all stages in the development of the individual. It need not be limited to just those subjects with which it has been traditionally associated. There can be found portions of all abstract school subjects which offer possibilities for observational training. Usually the so-called uninteresting school subjects can be made interesting through directed observation. The ability to observe and to record accurately what one sees and hears will be stimulating to subsequent study. Also, the assignment, if assisted by check-lists and observational outlines, will serve effectively as a motivating factor in observational learning. Success in making accurate reports of observation is encouraging to the learner, and this condition depends on ability to observe carefully what one sees and hears. That there is a need of analytical experience in training for observation is obvious from accounts given not only by those who have made casual observations of events and processes, but also by those who have been intensely interested in events and happenings. It is a fact supported by experimental practice that specific training will improve the ability to observe in a particular field of study, but it does not transfer to other fields having unlike elements. This is probably one reason for the existence of poor observers. Other reasons

are inexperience and prejudice. Poor observers can be made more effective through directed practice in observing. In spite of training and experience in improving observation, however, there will still be inaccuracies. These can be most effectively corrected by repetition of the observation by the same or a different person. For checking on the accuracy of observations, there are many types of objective tests that may be used. The recall and the recognition tests may be made up in the form of limited-recall, identification, and multiple-response or alternate-response exercises and employed for this purpose. Sometimes one type of test will be a more effective means of measurement than another. The purpose for which the observation is made will determine the nature and type of tests to be used. Only directed observation needs to be measured, since undirected observation is chiefly engaged in for social purposes or for purposes of amusement. The results of controlled observation should show how accurately the individual can report what he has seen or heard and how well he has retained his experience for future use.

STUDY QUESTIONS

1. What is a good illustration of direct experience? of vicarious experience?
2. Under what condition might observation be an end in itself in learning?
3. What is the value of directed observation?
4. How reliable is ordinary observation?
5. What characteristics of observational learning are illustrated by such stories as "Eyes and No Eyes" and "The Good Natured Little Boy"?
6. Why has observation been limited to certain fields of study?
7. How is observation affected by the use of real objects and events, pictures, graphs, maps, and the like?
8. What are some of the qualities of a good observer?

9. What is a type of activity in which a class might engage as a unit in observation?

10. How are inaccuracies in observation effectively corrected?

11. Why do some people observe more than others in the ordinary course of a day's events?

12. What one factor will largely determine the type and nature of tests to be employed in checking on observation?

13. What is the value of a student's check-list for evaluating observation?

14. What is the value of experience gained through direct observation?

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CHAPTER XIV

Motor Learning

Introduction. It is generally understood that there are few mental activities which are not intimately associated with motor activities, but it is difficult to determine whether or not one type occurs without the other. Ordinary observation reveals, however, that learning of a more or less mental type is in the ascendancy at one time and that motor or movement learning is chiefly involved in an activity at another. Theoretically, then, a distinction between these two types of learning may be made for convenience in discussing them, but practically such a distinction cannot be maintained. Nevertheless, in order to understand the working of the learning process, it is often necessary to consider it from different angles. This practice enables one to understand more fully the functioning of the total process of learning. Since considerable learning in school is chiefly of the motor type, a brief treatment of it will be given in this chapter.

Motor learning is movement learning. Movement learning is a term which may be used to describe what is commonly known as motor learning. It is learning through doing and represents a type of learning which is commonly employed by children in many activities involved in the school curriculum. It may be simple, as in learning to hold the index finger in a certain position in writing, or it may be very complex, as in learning to transmit long words by telegraphy. It is characteristic of the manual arts, home economics, and certain commercial subjects, such as typewriting, comptometry,

and shorthand; and also of the laboratory sciences, among which may be mentioned biology, chemistry, and physics. In all these subjects certain motor skills are involved. Some of these skills are of quite general significance or use; some of them are peculiar to the subject and have little significance anywhere else. Learning to sew is an example of a practical type of learning. The movement skills required in the laboratory sciences are incidental to the understanding of the process or operation of the experiment, while learning to sew is a process justified in and of itself. Many types of motor learning are of the latter type.

Skills involved in motor learning. Usually, there are two general classes of skills involved in movement learning: skill in understanding the processes, such as operating a motor or building an electric battery; and skill in bodily movement, involving muscular coördination, which is essentially a motor or physical skill. In the first instance, whatever bodily activity is required is designed to further the mental activity as in getting an understanding of a process or principle by laboratory experiment. In the second instance, the situation is just the reverse. Here the mental activity is incidental and is concerned primarily with the development and successful accomplishment of the play or work skill of the movement type, as in batting a ball, throwing a curve, swinging a golf club, riding a bicycle, skating, planing a board, sharpening a tool, and the like. The end here is success in the skill. The chemical laboratory experiment is a capital illustration of a skill which is fundamental to understanding a process or principle, whereas playing tennis is a good example of a motor skill which is an end in itself.

Common uses of motor learning. The function of movement learning consists, first, in enabling children to do those

things which are necessary in common life activities. Learning to eat, walk, and talk are examples of motor learning. This learning through the muscles, more or less, also helps the child to understand things and processes. It is the main function of the school to furnish the pupil with opportunities to perfect motor skills and to understand them better. Learning the meaning of the process is sometimes entirely unnecessary. The activity is sufficient in and of itself. The child first learns to ride the bicycle for the sheer fun of it. The laws of mechanics which enable him to operate a bicycle are concerns for later years, but he can never understand a bicycle fully until he has learned how to run one. This learning seems to be especially enjoyable and necessary in childhood and difficult, if not impossible, in old age.

In motor learning, the individual is concerned with the acquisition of certain skills which are not only essential to the understanding of processes and operations but also important to the graceful performance of bodily movements. In learning to read, the learner must develop correct habits of eye movement and control, and proper articulation, audible or silent. In acquiring skills of the physical type, such as skating, dancing, playing golf, or in planing a board or sharpening a tool, the learner must develop correct habits of bodily posture, movement, and equilibrium. In short, the learner must not only acquire knowledge of the character of good performance, but he must also attain considerable skill in producing desirable outcomes as a result of practicing good performance.

Motor learning situations. The content or subject matter in which the learner is interested will determine, in part, what skills must be developed. Occasions calling for the development of movement skills will be found in the

laboratory sciences, chemistry, biology, and physics; in the vocational subjects, home economics and manual arts; in the commercial subjects, typewriting and shorthand; in the fine arts, painting, drawing, and music; and in certain extra-curricular activities, such as athletic games and other sports. On the basis of motivation, the movement skills may be subdivided into play and work skills, in which case a number of specific activities may be found best adapted to the development of these skills. For instance, in developing the play skills, skating, and playing ball and tennis, physical education equipment will be needed; whereas in developing the work-type skills, such as measuring the quantity of oxygen in a given amount of air, sharpening a tool, or operating a lathe, laboratory equipment and content from the fields of science and industry will be necessary. For purposes of illustration, a partial classification of the subject-matter fields in which movement skills of the play and work types are found will be suggested for study.

Curricular and Extra-Curricular Activities in Which Movement Skills of the Play Type Are Involved

1. Mechanical puzzles
   Keys, links, rings, squares, triangles, etc.
2. Room games
   Odd and even, bean bag, ring toss, etc.
3. Games outside of school
   Croquinole, marbles, hide and seek, prisoner's base, crack the whip, etc.
4. Sports
   Skating, dancing, skiing, tennis, handball, baseball, basketball, swimming, canoeing, fishing, hunting, etc.
5. Miscellaneous
   Whittling, carving, tinkering, building a radio or a ship model, playing a musical instrument, caring for plants, caring for pet animals, etc.

Curricular Activities in Which Movement Skills of the Work Type Are Involved

1. Laboratory sciences
   Manipulating iron and ring stands, bunsen burners, glassware, dissecting instruments, microscopes, galvanometers, siphons, pumps, etc.
2. Industrial arts
   Mechanical drawing, cabinet making, lathe work, pattern making, forging, casting, etc.
3. Arts
   Painting, drawing, sculpture, etc.
4. Natural and social sciences
   Manipulating charts, maps, globes, stereoscopes, lantern slides, magazines, readers' guides, etc.

The number of curricular and extra-curricular activities in which movement or motor skills are involved may be extended almost indefinitely. The illustration given above merely suggests the possible use which teachers may make of learning through doing of this type.

Guidance is essential to secure interest. Motivating movement learning is not so difficult a matter as motivating associative learning. However, it is not safe to assume that motivation will take care of itself. Activities, whether of the motor or of the mental type, will call for careful guidance. Otherwise, practice or drill work becomes monotonous and therefore uninteresting to the learner. Usually, in learning a movement skill, the same general principles should be adhered to as in learning a mental skill, such as adding or subtracting numbers. As in drilling the arithmetic combinations, the length of the practice periods and the intervals between them must be carefully adjusted so that optimum working conditions will be provided. Furthermore, success and progress must be indicated at every turn in this sort of formal practice to keep up interest. In fact, all the princi-

ples of guidance and motivation employed in mental drill work will be found applicable to motor or movement learning. Practice in singing, dancing, skating, playing games, planing a board, or operating a lathe will become very uninteresting to the learner if carried on for long periods without optimum intermissions or intervals between practices. Success is stimulating in movement learning as in the case of mental learning.

Other things being equal, interest in the movement skills will be less difficult to provoke than in the case of the more abstract mental skills. This fact is more or less obvious for the reason that the learner is practicing with concrete things in motor manipulation, whereas he is practicing with abstract ideas in mental manipulation. Working with physical things adds interest and enthusiasm to the task for most children, although there may be a few exceptions to this principle. It depends on the mental capacity of the individual. Some very intelligent children may find little or no interest and enjoyment in manipulating tools or other physical equipment, whereas those children with limited mental capacity may become intensely interested in the activity. However, all children, irrespective of their mental status, enjoy the play skills.

The direction of independent work. The assignment in motor learning, in general, should be similar to that in mental learning. The work must often be very carefully directed and guided to prevent loss of time and error. In associative learning, the assignment may consist of directions showing the general character of the process or operation and the specific details of each step in it. For instance, in adding numbers, the directions will make clear where to begin, how to proceed, how to carry, how to put down the sum, and the like; in writing, the directions will depict some of

the hand and arm movements, how high to make certain letters, and how to space them. In solving a problem in geography, such as why some cities are larger than others, the directions will make clear what references should be read, what materials, as maps, charts, and statistical reports, will be of the greatest value in solving the problem. Likewise in the case of movement skills, such as playing tennis, the directions will specify the size and shape of the court, the kind of net used, its height from the ground, the size and shape of rackets, how to make certain kinds of strokes, and the like; in operating a lathe, the directions will specify the parts of the machine, the adjustments involved, how to apply pressure, and what precautions to observe in using the equipment. These directions may be given in the form of a job sheet, a laboratory guide, a manual of directions, a contract, a pattern manual, or in some other written form for study. The assignment for practice should embody the usual procedure of making assignments for drill work. The chief precaution to take is to make certain that the learner not only knows what he is to practice but that he also knows how to practice the skill correctly. This necessitates putting the learner through several practices or rehearsals before making the assignment for individual work. The correct performance of a skill must be established in class. Otherwise, individual practice may result in making awkward movements and many errors.

Theory must precede practice. There are two general classes of activities engaged in by pupils in learning a skill of the movement type. In one case, there is the activity of learning the theory of the skill, which will consist largely of explanations by the teacher, discussions by the group, and understanding by the learner. In the other case, there is the activity necessary in fixing the skill, which consists of

practicing the performance by the learner until it functions automatically. These are not two isolated activities but instead they articulate one with the other in perfecting the skill. In handwriting, for instance, if the objective of the activity is to attain a certain standard of proficiency, the learner must not only have knowledge of how to hold the pen and of the arm and finger movements, but he must also get the necessary practice before the goal or standard is reached. In case of baseball batting, the player must not only have the theory about holding and gripping ball bats, but he must also get the actual experience and practice of hitting curved balls. Likewise, in planing a board, the learner must first understand the theory of the operation before attempting to use the plane in smoothing the rough surface of the board.

The teacher's function. The teacher's function in developing movement or motor skills is practically the same as in developing mental skills. The discussion will, however, be limited to the activities involved in the motor type of performances. There are an unlimited number of things which the teacher may do to make clear the skill to be learned. Among other things, she may explain the specifications of the activity. Or she may demonstrate the use of certain kinds of tools or equipment, and whenever necessary illustrate the performance which is to be undertaken by the pupil. Then before actual practice is given in the activity, she may require each individual to rehearse the performance once or twice to make certain that its parts are perfectly understood by the learner. Or better still, she may use the rehearsal for purposes of making clear the performance as a whole or unit. For, after all, it is the large movement that the learner must understand and practice rather than its specific parts. It is probably unwise to have

the activity done in parts, since it is much more difficult to integrate the specific components of a performance than it is to learn these isolated parts, although this practice may be resorted to when the operation or process permits of being broken up into its elements without losing its significance. It is much more practical to have each individual go through the entire unit of work. Thus he gets the experience as an entity, and this is what is needed in most instances. The teacher may employ any or all of the following materials to aid in making the performance clear to the learner.

1. Charts
2. Pictures
3. Diagrams
4. Lantern slides
5. Motion pictures
6. Models
7. Real objects
8. Specimens
9. Demonstrations
10. Examples
11. Illustrations

The learner's function. The learner's function consists, first, in comprehending the directions and specifications of the operation or performance. This part of the work, however, may be done in connection with the preparation of the assignment if no special difficulties are encountered in its preparation. The next step will be concerned with getting the layout of the materials and equipment. And the final step will be largely a matter of procuring the necessary amount of practice to fixate the skill correctly.

Suggestions for economy in learning. Gates [1] gives the following suggestions for economy in motor learning. They are quoted verbatim:

1. Make a real study of the characteristics of the function that is to be learned. For this purpose may be utilized:

[1] GATES, A. I.—*Psychology for Students of Education,* Revised edition. Macmillan, 1930, p. 327.

   a. verbal descriptions
   b. direct observation of good performers or, usually better,
   c. pictures—especially slow-motion pictures—graphs, or other mechanical aids.
2. Make a real study of your own reactions as you learn. Develop ability to compare your own detailed acts or products with those of others and thereby detect and remove errors, select and practice successes.
3. Do not depend upon formal exercises of parts of a function except where the part offers unusual difficulty; on artificial exercise obtained by being put through a reaction except as a device for assisting observation of the form of the reaction; on the muscular and kinesthetic sensations. When in doubt as to the value of some unusual device, recall the principle: *one learns exactly the reactions he practices.*

The proof of the skill developed and employed in doing a job will be seen in the nature of the finished product, or in the attainment of other goals which are dependent upon skill in manipulating facts, information, devices, tools, and the like.

Appraisal, diagnosis, and remedial work. Measurement in motor learning must be largely confined to observation of the movement, detection and correction of errors, and evaluation of the product. A certain amount of diagnostic work must be done. Many inappropriate reactions are introduced in the early stages of learning motor or movement skills. In writing, painting, drawing, tennis, golf, and other skills, the teacher must not only be constantly on the alert for errors but she must also be an expert in instructing the pupil in methods of detecting them. Devices which help the pupil in the identification and elimination of errors will be necessary. Observation is ordinarily a poor method to use to detect errors, unless the learner has been trained to observe the details of a movement. Often photographic views, motion pictures, graphs, diagrams, and other records

may be satisfactorily employed to reveal inappropriate responses. Gates [1] emphasizes the importance of the diagnostic attitude of the learner in motor learning in the following words:

> In writing, drawing, carving, diving, turning handsprings and so on the learner must first get the correct position, and second, keep on the lookout for good and bad movements by watching the product, trying at the same time to detect the causes of errors and successes. As he masters the act, the conscious reactions gradually drop out because they are unnecessary. Nowhere does the attempt to get an idea of how a movement feels contribute anything useful to the production of the movement.

The following check-list will be found helpful in getting the correct movements in performing a motor act.

A Check-List for Guidance in Motor Learning

1. Did you observe a model?......................	YES	NO
2. Was it a picture of the movement?..............	YES	NO
3. Was it a living model?.........................	YES	NO
4. Would it make any difference whether the model was a living movement or a lifeless copy?........	YES	NO
5. Did it provide a clear idea of what was to be done?	YES	NO
6. Did you artificially practice the movement?......	YES	NO
7. Would artificial exercise be helpful in getting the "knack" of the movement?...................	YES	NO
8. Was the outcome of the performance clear?......	YES	NO
9. Did you master the parts of the performance without reference to the whole unit?................	YES	NO
10. Did you concentrate on the whole movement?....	YES	NO
11. Could you detect any errors in your movements? .	YES	NO
12. Could you tell whether you were making progress?	YES	NO
13. Did you ignore the incorrect response when you discovered it?............................	YES	NO
14. Did you concentrate on the correct movements?..	YES	NO

[1] GATES, A. I.—*Op. cit.*, p. 326.

15. Did you employ any mechanical devices to aid in detecting errors? . . . . YES NO
16. Did you try to get the "feel" of the movement? . . YES NO
17. Did you think it helped you to try to get the "feel" of the movement? . . . . YES NO
18. Did you compare your movements or rather the products of your movements with those of others? YES NO
19. Did you concentrate on the general outcome of your movements? . . . . YES NO
20. Did you know that one learns exactly the reactions he practices? . . . . YES NO

The outcome—correct performance. The chief outcome of motor learning is skill in attaining the correct performance of an act. The product of the activity reveals the character of the skill employed in producing it. If the learner has erred in some particular phase of the movement, the product of his efforts will disclose it. In no other type of learning is knowledge of progress so obvious and stimulating to the learner.

Summary. In this chapter that aspect of learning which has to do with the motor activities of the learner has been considered. This form of learning, while not found as a separate and distinct kind, occurring in isolation, is an aspect of the total learning process which is clearly illustrated in such learnings as skating, walking, learning to write or to play ball, and other types. The function of motor learning is to provide the individual learner with physical skills of various sorts. The process is accompanied by associative learning, observational learning, and problem solving. It particularly characterizes some school subjects, such as handwriting, art, physical education, music, and the like. There are many incidental motor learnings that accompany other subjects. Such learning is ordinarily interesting in and of itself and appeals especially to young children

because of their tendency to overt action. Skill in motor activities of various sorts is attained by intelligent understanding of the process and by interested and attentive practice. The assignment of work of a motor type requires great care on the part of the teacher. She must carefully initiate the processes which are to be learned and provide the pupil with means of evaluating his progress. Recitations involving chiefly motor learning are generally concerned with explanations, demonstrations, and practice on the motor skill. Measurement of the results of motor learning may be made in two ways: (1) by observation of the performance of the individual, and (2) by measuring or evaluating the product of the motor activity. Check-lists of various sorts are useful for this purpose. The outcomes of motor learning are skills and understandings of those skills together with appreciation of their uses and values.

STUDY QUESTIONS

1. What is the importance of manipulative activity in learning?
2. What is the distinction between a play skill and a work skill?
3. What are examples of motor skills? Mental skills? Play skills? Work skills?
4. How does motor manipulation further the activity of comprehending a process or operation?
5. What subject matter or materials are particularly suitable for training the motor skills? The mental skills?
6. Why is interest in mental activity usually more difficult to provoke than in motor or physical activity?
7. What precautions should the teacher take in assigning work for motor performance?
8. What are several conditions which are absolutely essential in the beginning stages of learning of any kind of skill?
9. What are several principles of economy in learning motor habits?
10. Why will measurement in motor learning be largely diagnostic in nature?

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CHAPTER XV

Associative Learning

Introduction. In the two chapters preceding, learning was analyzed as proceeding at times chiefly through direct contact with the external world by means of the use of the sense mechanisms and by exercise of the muscles of the body in actually handling objects, and thus getting an understanding of them through direct contact. These two types of learning were described as observational and motor learning. In the present chapter, learning will be studied from a different angle, that of associating words with their meanings and of fixing in the mind the meanings of things with which the child has had experience. The school has for a long period forced upon children the learning of set word patterns, such as tables in arithmetic, the spelling of words in writing, the sequence of words in poetry, etc. These types of learning called for the ability to associate sounds together in sequence even though the sounds themselves were not understood by the learner. Memorization and recall were the chief objectives of such a process. It is obvious that there is much occasion for learning of this type. Children cannot play a singing game unless they know the rime that is being sung. They cannot communicate unless they have learned the meanings of common words and the meanings of certain signs of communication such as facial expression and gesture. Wherever people are and things are happening, associative learning is taking place. In observational learning, associations are being formed and meanings recorded; in motor learning, the relations between

movements and their meanings are being worked out. Such learnings are largely incidental to the experience. Here we wish to speak of those specific situations in which the learner is attempting to associate words with their meanings, to associate the forms of symbols of all types with their meanings—in other words, to make the original connections that enable him to enlarge his stock of understandings. This type of learning we shall characterize chiefly as associative learning.

The nature of associative learning. According to our definition, associative learning is that aspect of the learning process in which the learner is attempting to understand and record the relations that exist in the world about him—word sounds with their meanings, people with names, dates with events, land and water forms with the terms which are applied to them, tables of measure with their meanings, names with faces, etc. We shall not deal here with the attempts to make permanent such experiences as will be learned in this way—that problem has been discussed in the chapters dealing with drill and with review—but rather with the original learning of these data and merely as a type of learning that occurs at times as the main business of the learner but is just as likely to occur incidentally at any time. Association is a natural tendency of the mind. Those things which occur together in experience tend to occur together again in memory. Correct and incorrect associations occur in the mind simultaneously. Learning is, in one aspect, the connecting of the associations with one another and the refusing of false associations as they arise. The problem of learning in one sense, then, is that of obtaining the right meanings that should attach to words, objects, processes, and things, and refusing to let the wrong meanings attach to them. It is obvious that at times

teachers and pupils are engaged chiefly in learning of this sort.

The function of associative learning. It is rather obvious from the foregoing discussion that the function of associative learning is to record in the mind the meanings of things and to fix these meanings so that when these things are met again they are recognized as having meaning. For instance, a child meets a new word—let us say, *elf*. "What," says the child, either to himself or to the teacher, "is elf?" Here is a new word sign; here is a new concept. What is the meaning of this sign? The teacher perhaps explains, "An elf is a small person somewhat like a fairy; perhaps it is a kind of fairy." The child makes an association; he already knows what a fairy is, more or less perfectly, so he says to himself, "An elf is a kind of fairy." Elf and fairy have become connected and he has learned an association. In this manner thousands of associations are constantly being made. There are not only associations between words and their meanings, but between places and events, processes and their uses, persons and events—all sorts of intricate associations must be made. As a matter of fact, every situation which is met stimulates the learner by suggesting past experiences. Learning is a chain of associations, starting with the elemental association between the mother and food and developing into an endless chain, based upon experiences of various kinds which make up the complex thing which we at any moment may call the mind of the learner. It is an important part of the work of the teacher to control the environment of the learner so that it is rich in the possibility of new associations of value and importance. This is a far broader thing than merely having the child learn to repeat a poem or recite the multiplication tables. The latter are fixed patterns of words which are learned and re-

peated. But first comes an understanding of the meanings of these word patterns, else the learning of words is little better than the mechanical recording of little indentations on the record which the phonograph plays.

Appropriate situations for associative learning. Associative learning, then, obviously occurs in connection with many subjects and with many types of activity and experience. Traditionally, there has been a great deal of mechanical association and recording in connection with spelling, language, history, geography, and other school subjects. Oftentimes words have been memorized without meanings and children have come to hate subjects because of the lack of true understanding of them. Today an effort is being made, especially in the social studies, to make these subjects have meanings by connecting them with the present life experience of the child. Meanings are learned by many methods, including direct contact with things, and associations are enriched by many forms of contact. Beginning with common things about him, the child traces them backward into the past. In the process he learns something of historical perspective and develops historical appreciation and historical sense. Associations are greatly enriched through many types of activity. Associative learning becomes an aspect of rich experience rather than the mouthing of misunderstood verbal signs. Associative learning is an aspect, then, of many of the school subjects and cannot be thought of as chiefly confined to any. Any subject matter that is studied involves experiences—verbal, motor, kinesthetic. These experiences enrich associations, connections between the stimuli, whatever they may be, and the experiences. It is the teacher's part to see that associations are rich with meaning on the child's level, that these meanings are understood and fixed in mind, and that sub-

sequently they are used in understanding new situations which arise.

Securing interest. Associative learning is more effective and certain when the subject or the experience is of great interest to children. Children seek for meanings when they are concerned with them in some useful way. If the subject is literature, then the literature must be within the grasp of the children. Likewise, in connection with any subject, if it is desired that children learn new words that are needed in the communication of ideas, then those new words must be related to the children's activities and interests. This is the law of motivation for associative as well as other types of learning. No extrinsic type of motivation can be valid. The motivation must come from the subject or activity itself.

Directing associative learning. In a lesson where the teacher especially wishes to increase the child's stock of associations, there must be skilled direction of the child's attention to the associations which she wishes him to achieve. An assignment of this type may be illustrated from the subject of geography. The child wishes to know what a desert is and why there is so much sand there; why there is no water; why it is so hot. The teacher then makes an assignment which directs the child to the observation of some pictures; perhaps she uses a lantern and a screen, some maps and maybe a physical experiment to furnish concrete data. She then directs the child's study by a series of questions or problems.

1. What do you notice about the sky in a desert?
2. What do you notice about the land forms?
3. What do you notice about the plants?
4. What do all these things suggest?
5. What does the map show you about the rainfall?

6. What does the map show you about winds? Mountains? Ocean currents?
7. What then do you find associated with the word *desert?*
8. What is a desert?

Throughout the study, the teacher directs the child to data which will furnish him with rich meanings about the desert and he learns to associate with the term those phenomena of nature which give to the word *desert* a meaning. The accuracy of his knowledge depends upon his power to make correct associations in the first place and to interpret the data in the second. The making of the associations constitutes the associative learning part of the experience and the solving of the problem is, in effect, a more advanced type of thinking which is discussed in a later chapter.

The class activities. In a situation in which associative learning is dominant, what is likely to be the type of recitation activity, if any? The answer is indicated in the preceding paragraphs. There are likely to be observation, discussion, and seeking for meanings and understanding. There may be an attempt to fix these meanings in memory through drill. More likely, however, there will occur enriched experiences with attempts on the part of the teacher to develop and draw out these experiences. There may be reporting of data, reading from books and magazines, the study of pictures, films, or other data, and a definite attempt to seek the meanings of things observed and to get correct ideas from the data under consideration. In the old school there might have been a great deal of verbal memorizing and drill. In the new school the latter is likely to be individualized and to be confined to a work period rather than to discussion and recitation.

Appraisal of results. How may the teacher evaluate a learning situation in which the activity is chiefly associa-

tive learning? There are certain criteria of achievement which may be employed.

1. Is the material to be learned related to the experiences of pupils?
2. Are sufficient data—pictures, objects, printed matter, etc.—being used to contribute definite meanings to the pupils?
3. Is the teacher attempting to direct the child's efforts to discover meanings or is she merely telling him what to remember?
4. Is the child definitely observing, questioning, examining, comparing, and evaluating the data under observation?
5. Are the children led to discover meanings and to note them rather than to memorize meanings which are given to them by the teacher?
6. Are the meanings under consideration sufficiently important to deserve the effort?
7. Are there evidences that the children appreciate the value of the meanings that have been developed?

Outcomes. The outcomes of exercises in associative learning are enriched understanding of words, symbols, processes, etc. The purpose of such exercises is to furnish pupils with more adequate concepts of words, objects, processes, and relationships. Children's powers of observation, evaluation, comparison, and conclusion are enriched. Chiefly, however, the attention is centered on the achievement of accurate associations and understandings. The skill of the teacher lies in having these understandings and associations achieved by the children rather than simply given them verbatim and memorized without understanding. It is rarely that arbitrary associations of words, signs, and symbols are necessary.

STUDY QUESTIONS

1. What is the particular significance of associative learning as it is discussed in this chapter?

2. In what period of childhood are new associations most plentiful and most confusing?

3. Does associative learning occur isolated from other aspects of learning?

4. What is the chief function of associative learning in the life of the individual?

5. What types of associations are common to different subjects?

6. It has sometimes been said that teaching a child to read is teaching him to associate words with their meanings. Develop this idea.

7. Show how meanings of words may develop.

8. State the chief value of subject matter in associative learning.

9. Discuss motivation in relation to associative learning. Must all learning of this type be motivated by efforts of the teacher?

10. What type of assignment is necessary when the problem is chiefly one of associative learning?

11. What types of activity are likely to characterize a recitation devoted to associative learning?

12. How may the student evaluate an activity which involves associative learning predominantly?

13. What are the outcomes of exercises in associative learning?

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CHAPTER XVI

Problem Solving

Introduction. Problem solving, or reflective thinking, is regarded by many as the type of mental activity toward which all simpler types of learning lead. It requires ability to reason, which is the distinguishing characteristic of intelligent activity. It may be thought of by the uninitiated as having to do chiefly with mathematics; but it will become obvious that mathematical problem solving is only one of the many forms which problem solving may take. It occurs in practically all school subjects and in most life situations. In the school curriculum the social and natural sciences afford particularly rich situations for the exercise of reasoning. The method by which problems are solved is, in effect, the scientific method. It is at the same time the most difficult and the most important method of thinking and learning. Ability to solve the problems which confront him enables man to exercise control over his activities and his environment. Without it he is at the mercy of nature and can make no intelligent social progress. Teaching children to think is one of the most difficult and important tasks of the teacher. The fact that more children do not learn to think effectively is not the fault of the school or the curriculum, because there is a great variety of problematic situations constantly present in both. The fault rather lies with the teacher who fails to understand the process of reflective thought and to provide situations for engaging in it.

Definition of problem. A problem is a felt difficulty; a difficulty that is clearly present and recognized by the

thinker. It may be a purely mental difficulty or it may be concrete and involve the manipulation of data in order to be solved. The distinguishing thing about a problem, however, is that it impresses the individual who meets it as needing a solution. He recognizes it as a challenge, either highly interesting and suggesting immediate action, or at least as something which ought to be dealt with by somebody.

Problem and project differentiated. Problems and projects are so often spoken of together, that it seems necessary here to distinguish between the two terms. Wilson and Wilson [1] distinguish between them as follows:

> But even a thoroughly motivated problem is not a project. The problem may be solved in thought only, while the project requires the completion of some objective piece of work based upon a problem or a series of problems. The difference is that the problem solution may end in thought, while the project can end only with the successful completion of an objective unit of work.

This statement probably represents the most obvious difference between a problem and a project. The latter is clearly a more purposeful and constructive activity, generally speaking. It embraces problems, both intellectual and physical.

Outstanding characteristics of good problems. The outstanding characteristic of a problem, then, is the existence of a difficulty, mental or physical, which demands reflective thinking on the part of the learner. There are, however, both good and bad problems, speaking from the point of view of the teacher and the child. A good problem for teaching purposes is clear, definite, valuable, interesting, thought-provoking, understandable, suitable, and practical. It strikes the child as worth while.

[1] WILSON, H. B., and WILSON, G. M.—*Motivation of School Work.* Revised edition. Houghton, Mifflin, 1921, p. 251.

A score card for evaluating a problem. It may be a rather interesting problem for the reader at this point to attempt to evaluate problems more or less definitely. For the purpose a tentative score card for the evaluation of problems is presented. The criteria for judging a problem are the characteristics noted in the preceding paragraph. First read the problem carefully and then evaluate it on the following card:

A Student's Score Card for Evaluating Problems

Criteria of a Good Problem	*Perfect Score*	*Student's Score*
1. Clear . . . . Free from language errors and ambiguities	10	
2. Definite . . . . Can be defined, or limited to a particular difficulty.	10	
3. Valuable. . . . . Impresses the learner as being important.	10	
4. Interesting . . . . Incites, urges, or drives to action, such as curiosity, manipulation, etc.	10	
5. Thought-provoking . . . . Challenges the learner to mental activity.	10	
6. Comprehensible . . . . Involves language and thought difficulty within the learner's capacity.	10	
7. Suitable . . . . Related to learner's experience and suited to his abilities.	10	
8. Practical . . . . Deals with a practical situation. Knowledge and skill gained is usable in other situations and the solution of the problem is worth while.	10	
Total Points	80	

It is a good plan to think of the characteristic which the problem has to a most pronounced extent. Give this characteristic a value of ten. Then assign values in decreasing amounts to each of the characteristics which the problem possesses to a lesser extent. A perfect problem would score eighty, for each characteristic of such a problem would receive as high a score as any other. Try this card on the problematic questions appended to this chapter. Compare your rating of problems with those of other students whom you may know.

Exercises in problem solving. The act of problem solving is perhaps best understood by analyses of problems followed immediately by an examination of the manner in which the problems were solved. It may interest the reader to try his skill on the following puzzle problems. When you have solved the riddles, then try to explain the method by which you solved them.

1. If three cats can catch three rats in three minutes, how many cats can catch one hundred rats in one hundred minutes?
2. A boy is sent to the well to get exactly seven pints of water. He has a four-pint measure and a nine-pint measure. He is to begin by filling the four-pint measure. How shall he measure out exactly seven pints?
3. The man who made it wanted to sell it. The man who bought it never used it. The man who used it never saw it. What is it?
4. A steel band is placed around the earth at the equator so that it fits tight. The band is cut and thirty-six additional inches are put in. How far would the new band stand out from the surface of the earth, assuming π to be exactly 3?
5. A farmer brought five pieces of chain, of three links each, to a blacksmith and asked the cost of making them into one chain. The blacksmith replied, "I charge one cent to cut a link and one cent to weld a link." The farmer remarked that as it would require four cuts and four welds, the charge would be eight cents. "No," said the blacksmith, "I figure it but

six cents." Show how this could be done by cutting three times and welding three times.

6. Use me well and I am everybody. Scratch my back and I am nobody. What am I?

In the solution of riddle number 6, see if you can detect appropriate methods of procedure. First of all, attempt to find objects which must be handled with considerable care for service, such as, for example, automobiles, telephones, radios, refrigerators, chairs, books, mirrors, lamps, vases, etc. Then, begin to eliminate those objects which do not have backs, such as lamps, and vases, for it is a condition of the problem that the object must have a back. Continue the process of eliminating those objects whose service or usefulness is not impaired by having their backs scratched. See now if you can find the object which best answers the conditions stated in the problem. A careful analysis of this puzzle problem will show that many of the principles involved in problem solving are present. These are stated and briefly discussed in a later section of this chapter.

Types of problems. In schools, teacher and pupils meet all kinds of problems, intellectual, social, and manual. Every subject has its problems. To list and define each of these types of problems would take more time and space than are available in this book. The puzzle problems presented in the last section are more or less play problems which many people enjoy for recreatory purposes. Perhaps more important than these from an educational standpoint are social problems of various sorts. History and geography abound in such problems. A few will be given here to illustrate:

1. Why is transportation by water usually less expensive than that by railroad?
2. Why are farmers in Illinois usually more prosperous than farmers in Vermont?

3. Why is Pittsburgh a larger city than Indianapolis?
4. Should the United States insist on maintaining the "open door" policy with reference to China?

To present the subjects of history and geography so that such problems as these are met and solved is to give interest to the study of the subjects and, at the same time, train the student in the art of reflective thinking.

There are, too, involved in school life practical problems which furnish excellent opportunities for teaching to think. Such problems as these are being met constantly.

1. How shall we raise money for a memorial which we wish to present to the school at graduation?
2. What kind of play shall we give?
3. How shall we raise money in order to help boys and girls have milk who are now unable to have it?
4. How can we make our room appear better?

These and a thousand other problems are seldom thought of by teachers as affording opportunities for teaching children the art of problem solving, but as a matter of fact they are problems *par excellence*.

The statement of problems. Problems may be expressed in a variety of ways; as questions, propositions, purposes, or topical outlines. Examples of these are:

1. A question: Why are the farmers in Iowa more prosperous than the farmers in western Canada?
2. A proposition: Farmers in Iowa have a better opportunity to become prosperous than farmers in Wyoming.
3. A purpose: To find out whether Iowa farmers have a greater opportunity to become prosperous than farmers in Illinois.
4. A topical outline: The prosperity of Iowa farmers: cause, extent, factors interfering with, measures needed to improve, etc.

There are no doubt other forms of statement which might be suggested, but that is not necessary, for it is not the form or type of a problem that is important to the student; it is an understanding of the essential nature of problems that is significant.

The two major functions of problem solving. Exercises in problem solving are necessary for two major purposes: (1) to train the child in the art of reasoning and (2) to give him practical knowledge and skill valuable in life. Problem solving should not be taught in and for itself alone, but rather as a means of reaching the solution of real difficulties which make some difference to the learner. Such exercises should teach pupils to locate and define problems, to seek for tentative solutions of these problems, to try out these solutions until one of them is selected as the true one, to verify this solution, and finally to apply the solution in his life activities. Much problem solving stops short of the last step in this series. From such exercises the pupil will gain power to meet new situations, to analyze them, and to solve the difficulties in them through the use of a systematic procedure. This procedure is the inductive-deductive method, the art of reasoning, or the power of reflective thinking. It is important to remember, however, that real problems give this power more certainly than unreal problems unrelated to the child's experience.

Neither children nor adults engage in problem solving except for some definite purpose. The function of problem solving is to enable them to realize this purpose, whatever it is. Some of the purposes which may move teacher and pupils to attempt problem solving are as follows:

1. To learn the art of problem solving
2. To learn how to do something
3. To discover new knowledge

4. To escape the consequences of some act
5. To learn how to act in a new situation
6. To learn how to make something
7. To solve a puzzling mental problem
8. To get out of a difficult situation
9. To learn to suspend judgment
10. To learn to define and limit problems
11. To learn how to find solutions
12. To improve judgment
13. To verify an opinion
14. To discover a new process
15. To invent a new device
16. To create a new idea
17. To improve knowledge
18. To entertain others
19. To help another solve a problem
20. To satisfy curiosity

It is the function of problem solving to aid both teacher and pupils to satisfy such purposes as are suggested above. It is the work of the teacher to create situations in which real problems, involving determined action on the part of the pupils, will be often met.

Teaching problem solving or reflective thinking is now thought to be one of the most important functions of the teacher and the school. Ordinarily it is now carried on by use of the problem method, which is, in effect, simply the method of approaching a subject or an activity as a series of problems.

Subject matter. An investigation of the curriculum of the past will show that mathematics and certain fields of science were the only ones in which problem solving was seriously practiced. It is probable that this was due to the fact that these subjects provided chiefly for the reflective-thinking type of learning. It is now more common for teachers to employ problem solving outside of these fields. His-

tory and geography offer an abundance of opportunities for problem solving. Civics and elementary science abound in problems. Likewise, other so-called content subjects contain much material suitable for this purpose. Examples are numerous in many of the newer type of textbooks for the elementary school. The Branoms [1] make a timely statement with reference to appropriate materials for problem solving in geography. They say:

> Appropriate materials for the solution of the problem may not be available. This difficulty is gradually disappearing. Better textbooks are being published, special studies are being made, better maps and maps in greater variety are being published, the homes are using more reading material, and public libraries are becoming increasingly numerous. Under modern conditions no teacher should excuse herself from problem work with the explanation that she has inadequate equipment for this type of work.

The Branoms' *The Teaching of Geography* is one of the best examples of a special-methods book designed primarily to illustrate how materials may be organized on the problem basis. The interested student may find published today a textbook, organized on the problem basis, for almost every subject of the elementary school and for a number of the high school subjects. Typical of such modern texts are Huntington, Benson, and McMurry's *Living Geography* (for elementary schools) and Peabody and Hunt's *Biology and Human Welfare* (for high schools). Such references as the *Twentieth Yearbook* of the National Society for the Study of Education, Part I, and Yoakam's *The Improvement of the Assignment*, Chapter XII, contain sources of information on the preparation of new-type materials for instructional purposes. These newer types of materials are noticeable for the inclusion of the abundance of problems

[1] BRANOM, M. E., and F. K.—*The Teaching of Geography*. Ginn, 1921, p. 189.

in them. One of the fundamental purposes behind the better types of teaching in these subjects is to teach children to think reflectively.

Making problem solving interesting. The very fact that a great deal of useless subject matter has been eliminated from the curriculum makes the task of motivating school work less difficult today than formerly. Many believe that the problem method has been largely responsible for making classroom work worth while and interesting to children in spite of the fact that the conventional school curriculum still retains obsolete material and encourages outworn methods of procedure. Modern textbooks written on the problem basis are sufficiently interesting in themselves to vitalize school work for the average child. If, however, the textbook fails to supply the necessary challenge for children, the teacher must make good the deficiency. She may do this by creating problematic situations in which children feel the need for doing something worth while. Oftentimes, a real problem is all that is needed to supply the motive for launching into an activity. Wilson and Wilson, in their *Motivation of School Work,*[1] show how a real problem may be created in geography. It is interesting to observe how detailed their technique is for this purpose. It is, in part, as follows:

Under the study of shelter, the gradual advance from the log cabin to the present splendid homes was noted carefully, and then the work and questions involved in building a house today were taken up. Where is wood obtained? Where was more of it obtained formerly? Why? How was it formerly prepared for use in building? How is it now prepared? What kind of wood was used for building formerly, and at the present time? Notice the rafters and joists in a very old house, and compare with the sawed yellow pine in a

[1] *Op. cit.*, pp. 138–40.

new house. Where do we get the yellow pine? What would you see if visiting a lumber camp in Mississippi? Where do we get the red-cedar shingles? What was formerly used? In the same way attention was given to other materials, nails, plaster, glass, etc.

. . . .

The study of fuel led to the realization of the fact that wood was formerly used as the only fuel; that forests were ruthlessly destroyed; that at present there is a scarcity of wood; and that prices are high accordingly. Coal is now the chief fuel of the community. The effort was made to find out about this fuel by visiting coal yards, by making inquiry as to the source of the coal supply, by making an imaginary trip into the coal fields of West Virginia, by going down into a coal mine, and possibly by coming to know some of the fellows who worked day after day in mining the coal which was burned in their grates and furnaces.

. . . .

In a similar way and as thoroughly as third-grade pupils were able to do so, the present method of lighting as compared with former methods was studied.

An illustration from history. History can be motivated by attacking real problems in which children reënact and relive the deeds and events of the past. This is excellently shown in the work[1] just cited. Such undertakings as the following, mentioned in connection with motivating history, contain problems in abundance to challenge the child to think: writing imaginary diaries of great men and women; making supposed speeches of statesmen; representing a constituency in the Legislature or Congress; preparing to debate some questions which are before Congress for settlement; dramatizing scenes and stories; arranging pageants; making special reports; gathering information from the library; bringing something of historical interest from home; reading stories of adventure; and similar activities. There is, in fact, almost no end to the problems which history offers

[1] *Ibid.*, pp. 101–32.

for motivating thinking. Other subjects of the curriculum have their problems which are particularly challenging and interesting. Motivation is easily obtained when vital problems, related to the child's experience, are attacked.

Large units more easily motivated. Usually, the motivation of large units of subject matter is less troublesome to the teacher than the motivation of small or daily units. This is the chief reason why the teacher should organize subject matter in the form of problems or projects. A few of the commonly employed types of activity which are replete with opportunities for challenging problems are suggested below for analysis and study. The student should attempt to add others to the list.

1. Making excursions
2. Tabulating data
3. Presenting pageants
4. Dramatizing stories and events
5. Telling stories and anecdotes
6. Making booklets
7. Organizing a town council
8. Writing speeches for a convention
9. Charting data
10. Making statistical tables
11. Graphing data
12. Making products maps
13. Doing a type of research work
14. Constructing practice exercises

The assignment in problem solving. Problem teaching requires considerably more work on the part of the teacher in making assignments than most conventional methods of assigning lessons. The reason for this is obvious. The teacher cannot merely assign pages and chapters promiscuously from textbooks for the next lesson without a preliminary thinking through of the problem and a planning

of the procedure. Definite reference to materials must be found, tentative statements of problems must be made, and plans for creating the problem-solving situation must be formed. The problem may then be raised and discussed and the assignment made. This practice demands exceptional skill and adaptability. Many teachers are very skillful in getting pupils to accept a series of problems already organized in the form of lesson units; others are adept at developing problems with pupils and then suggesting materials which will aid in their solutions. The latter practice is more desirable, in most instances, but it is a more involved enterprise than the former. Making the assignment in problem teaching thus entails a great deal more work on the part of the teacher than merely giving a page assignment from a regular textbook in the ordinary way. It necessitates careful study of materials, their organization, and the collection of definite references of a variety of types.

Since problem teaching generally assumes large units of work, the making of the assignment is not ordinarily a daily affair. It may take considerable time in the early stages of initiating the problem before the assignment can be adequately made; then the same assignment may hold over for a period of time with only supplementary directions indicated now and then as the teacher deems advisable.

There are a number of factors to be considered in making the assignment in problem solving. First of all, there is the necessity of knowing something about the ability of the group to study in a variety of situations. Then there is to be considered the difficulty of the subject matter involved in the problem. Besides, such factors as availability of reference materials, the effectiveness of habits of study, and the ability to forge ahead or make a reasonable amount

of headway from time to time will have to be taken into account. In fact, pupils who do not possess a great deal of independence in habits of study will have to be skillfully guided, at least in the beginning stages of solving problems. If out-of-class assignments are necessary at times, they should be very definitely stated. Otherwise, much time and effort will be consumed by pupils in searching for data pertinent to the solution of their problems. Usually, it is best to break the major problem into its elements or subproblems for specific attack by each pupil. Definite and detailed references to materials should be made. The capable pupils should be assigned special tasks to supplement the work of the average group. Each pupil must know definitely what he is looking for and how to find it. All must be responsible for making an earnest effort to find answers to their problems and in preparing for the group discussions which follow.

General techniques of assignment suggested. These conditions demand a teacher skilled in the assignment technique. Yoakam [1] suggests a number of factors in which teachers must be adequately trained in order to make successful assignments. Among the techniques which, he states, need emphasis are:

1. *Arousing interest.* The teacher must supply the challenge if the textbook does not. A number of devices for this purpose have already been suggested.
2. *Relating the old to the new.* Bridging the gap between the known and the unknown is a gradual process involving comment, questions, problem raising, conversation, story telling, etc. Observation and practice are essential factors in learning the technique.
3. *Raising problems and questions.* Observation of good models

[1] YOAKAM, G. A.—*The Improvement of the Assignment.* Macmillan, 1932, pp. 120–41.

and practice are also essential to the attainment of skills in this technique. Self-activity is necessary and should be encouraged.

4. *Giving out references.* References should be given in detail so that children may find their materials with a minimum of time and effort. Teachers should know how to use reference guides themselves as well as how to make bibliographies.
5. *Making printed, typewritten, and hectographed copies.* Teachers should understand how to operate duplicating machines so that they may make their own assignment sheets, outlines, and lists of references.
6. *Using ready-made practice materials.* These are not only helpful in making assignments but they are also valuable for ideas about materials which may be organized into assignments. Practice materials for many school subjects are available in commercial form.
7. *Individualizing instruction.* Teachers should know how to make unit plans, or to differentiate assignments according to children's ability to make reasonable headway in their preparation. Devices such as are now employed in the Daltonized schools will be found helpful in this respect.

Activities of the class period. Generally, the class activity involved in problem teaching consists of stating and defining problems, reporting data gathered, and discussing the solutions of the problems raised or formulated through the coöperative thinking of pupils and teacher. It is a group affair in which pupils find an enriched opportunity to do reflective thinking. They suggest tentative solutions of problems and give supporting data. They compare and evaluate these different solutions, and when the solutions are unsatisfactory they do additional searching for data according to the directions indicated by the teacher. New problems arise which require further research and study for their solutions. Sometimes practice or drill will be found necessary in order that pupils may carry on their work successfully. Throughout the recitation, pupils maintain a

tentative attitude about their data and inferences, and suspend judgment until sufficient data are collected to warrant making conclusions.

Steps in problem solving. While there is no rigid formula that will insure success in problem-solving, the following steps will be found suggestive of activities in which pupils may be reasonably expected to engage in solving a problem:

1. *Raising the problem.* This is an assignment activity and a phase of the recitation. The problem may be stated first, and then interest aroused in it, or it may be developed from a discussion of experiences which have previously been undergone by children. If the statement of the problem is sufficient to challenge pupils to attempt its solution, further attempts to arouse interest in it would seem to be unnecessary. Usually, raising the problem requires considerable questioning and discussion covering the situation out of which the problem will eventually arise. Sometimes, several class periods may be used in preparation for investigation and study. No rigid rule can be followed; no infallible way of doing this can be stated. The teacher must see to it that the problem gets before the children in such a way as to arouse their interest and challenge them to study it.
2. *Interpreting the problem.* The teacher may explain the problem in detail when presenting it to the class, or the pupils may interpret it through discussion. The nature of the assistance that will be necessary from the teacher depends largely on the difficulty of the problem and the ability of pupils to make a reasonable amount of headway in their interpretations. It is too much to expect of young children that they shall invariably define and limit their own problems. Older children should gradually develop much initiative in interpreting new problems that arise.
3. *Gathering and evaluating data.* After pupils have grasped the meaning of the problem, they must then be stimulated to gather and evaluate data for its solution. The teacher must provide ways and means of getting them to search for suggested solutions. She must indicate sources, or pupils must

discover them for themselves by reading, studying charts, graphs, statistical tables, pictures, etc. If pupils have difficulty in recalling quickly and accurately all they know about the problem, effective aids may be employed, such as clues, or substitute activities. Sometimes crutches and mnemonic devices may facilitate recall. But these are not always practical nor effective. When pupils have gathered all the data they can, they may be asked to state several hypotheses. These are valuable in furnishing "leads" to additional data. As materials are gathered and assembled, it will be necessary to evaluate them. Superficial materials must be eliminated and only the pertinent data included. Then the next step in solving the problem becomes important.

4. *Formulating tentative solutions.* All inferences bearing on the data at hand must be considered tentatively. Judgment must be suspended until sufficient data are gathered, evaluated, and organized in a systematic manner to further the solution of the problem. When reasonable time has been permitted for purposes of evaluating the various tentative solutions, the true solution should become apparent. It should be stated, right or wrong, by the pupils. This phase of problem solving demands an unusual amount of guidance and patience on the part of the teacher. She must suggest solutions and inferences in a judicious manner without injuring the feelings of those who jump carelessly at conclusions. Incorrect conclusions cannot be dogmatically rejected, for this kills enthusiasm and fosters antagonism among those pupils who try but are unsuccessful.
5. *Verifying the results.* When the class has accepted the conclusion which is most likely to be the best one, steps must be taken to prove its correctness. This may be done in a variety of ways: (1) by applying the hypothesis to new situations; (2) by experimenting further with it; or (3) by gathering new data through study and investigation.

Parker's suggestions. Parker [1] suggests the following plan for the teacher to employ in stimulating and assisting pupils to carry on reflective thinking:

[1] PARKER, S. C.—*Methods of Teaching in High Schools*, Revised edition. Ginn, 1920, pp. 185–198.

1. Have pupils define the problem at issue and keep it clearly in mind.
2. Encourage them to recall as many related ideas as possible.
3. Have them evaluate the suggestions as they arise.
4. Help them to organize their material so as to aid the process of thinking.

Dewey [1] expresses about the same idea in his analysis of a complete act of thought, in which he advocates the following procedure:

1. Create a felt need to do something.
2. Locate and define the difficulty.
3. Attempt several possible solutions.
4. Develop the suggestions sufficiently to indicate the ways in which they apply to the data at hand.
5. Continue making further observations leading to the acceptance or the rejection of the solution.

One of the most valuable treatments of problem solving in print is to be found in Lyman's book *The Mind at Work.* This book contains an excellent analytical treatment of the important mental activities involved in problem solving and suggests valuable references. The student should read this book to enrich his knowledge of the subject. Reference to it is made in detail at the end of the chapter.

The use of measurement. Ability to solve problems is difficult to measure with any degree of accuracy. Usually, the solving of a problem is the test of success. If pupils are carefully directed in their evaluation and organization of data and are required to verify each step in the process, they should reach the desired outcome—the solution of the problem. There will generally be a need, however, for administering tests of certain types to check on the retention of facts, the use of skills, and the application of ideas

[1] DEWEY, JOHN—*How We Think.* Heath, 1910, pp. 68–78.

gained to new situations. Objective tests may be devised and administered for this purpose. Many of these are discussed in another chapter of this book. Often a well-prepared written report of the progress made in working out the problem will take the place of an examination; or better still, a check-list designed to call the learner's attention to the essential elements of problems and their solutions may be employed by the student. Such a check-list is suggested here as a model for study and use.

A Student's Check-List for Judging Problems and Their Solutions

Directions. Encircle "YES" if you observed any of the following conditions in solving your problem; or encircle "NO" if you did not observe them.

1. Did the problem originate with the class?........	YES	NO
2. Were you a partner in originating it?............	YES	NO
3. Did you accept it without any reservations?.....	YES	NO
4. Did it fulfill a need or purpose?................	YES	NO
5. Were you enthusiastic about it?................	YES	NO
6. Was the problem related to any previous experience that you had?..............................	YES	NO
7. Did you make contributions toward its solution?..	YES	NO
8. Did you have any difficulty in gathering your data?	YES	NO
9. Did you know where to obtain data for your problem?..................................	YES	NO
10. Did you feel that the problem was yours as well as a class problem?............................	YES	NO
11. Did you know when you had discovered pertinent data bearing on the solution of the problem?.....	YES	NO
12. Could you evaluate and organize your data so that you could arrive at an answer to the problem? ...	YES	NO
13. Were you continually guessing at the answer?....	YES	NO
14. Did you often make inferences that were wrong?..	YES	NO
15. Did you know when you had made a correct inference?..................................	YES	NO
16. Did the class agree on the correct solution of the problem?..................................	YES	NO

17. Did you agree with other members of the class on the correct answer? . . . . YES NO
18. Was much additional study required before the final answer to the problem was decided upon? . . . YES NO
19. Did the class verify the solution of the problem? . . YES NO
20. Were further investigation and study necessary in order to verify its solution? . . . . YES NO
21. Could you use any of the knowledge gained through your study of the problem? . . . . YES NO
22. Could you think of a more desirable problem for the purpose for which it was used? . . . . YES NO
23. Has your ability to think been improved as a result of your study of the problem? . . . . YES NO

The permanent effects of training. Problem solving develops the ability to criticize suggestions in an open minded and unbiased manner, the ability to assume a tentative attitude about matters which have not been entirely settled on account of insufficient data at hand, and independence in general habits of study. Pupils learn to plan because they assume the responsibility of doing some research in an effort to make important contributions to the class. They learn what is relevant and what is not from group discussions. And there is always something to do for the next day's lesson because so many sub-problems and unexpected difficulties arise from the discussion of data collected. All these abilities integrate into the one large ability to think independently.

Summary. A problem is a difficulty which challenges the individual to action. It may be solved in thought only or in overt action controlled by thought. In either case, it possesses the same general characteristics—it involves purposeful activity, a challenge, a personal appeal, definiteness, and suitability. The process by which it is solved is called reflective thinking. Problem solving teaches pupils to gather

data, to plan, to evaluate, to criticize, to organize, to form tentative conclusions, and to suspend judgment when necessary. It is applicable to practically every subject of the curriculum. Some subjects offer advantages over others in finding and formulating problems. History and geography are examples in point. A good problem is usually self-motivating because it supplies a personal need to do something purposeful. It is a means of vitalizing the assignment, although a problem assignment is much more difficult to make than most conventional assignments. This is due to the fact that problems are not ready-made in most content subjects, but must be discovered, formulated, and revised from time to time as reports and discussions proceed. The recitation in problem solving is an open forum for discussion. Pupils and teacher reason together. Pupils gather data; evaluate, and organize materials; suggest tentative solutions of problems; and, when solutions are unsatisfactory, do additional research and study from which new problems constantly arise. The teacher is an active observer; she gives guidance when it is most needed, but she never assumes responsibility which can be successfully undertaken by pupils. Success consists in the actual solving of problems. Its measurement may be satisfactorily made from time to time by well-prepared written reports on the progress of problems by pupils or by self-checking lists. This practice enables the teacher to observe the amount and character of research work done, the care exercised in planning, evaluating, and organizing data, and the nature of reflective thinking and judgment employed in solving problems, and makes the pupil conscious of his progress through self-analysis. Great as contrasted with indifferent teaching, in the last analysis, is measured by its success in developing among pupils ability to solve problems.

STUDY QUESTIONS

1. What is a problematic situation? Give illustrations from life.
2. What are the chief features of a good problem?
3. Why are problems often difficult to formulate in some school subjects?
4. What is an example of a good problem in history? In geography?
5. Why are problems often vitalizing factors in school work?
6. Why are assignments usually difficult to make in problem teaching?
7. Why are large units of activity more challenging than short units?
8. To what extent does problem teaching encourage research work?
9. How does the problem you selected from history and geography fit in with criteria given in the score card?
10. Why is the written report a more satisfactory measure of the success of problem solving than other kinds and types of tests?
11. What is the value of a check-list in problem solving?
12. How would a check-list for solving ready-made problems differ from one for problems to be formulated by the class?

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CHAPTER XVII

Experimental Learning

Introduction. Research, or searching for and discovery of new information, is a form of learning which should not be thought of as limited to the graduate school, for much of the learning that actually takes place in the kindergarten and primary grades is of the experimental type. It is a significant fact that the experimental method is used to some extent, at least, in learning practically every school subject and in every grade of instruction. In fact, all learning is, in a sense, experimental. The method requires that the learner shall be permitted to discover things for himself, that he experience conditions as they actually are, and that he formulate his own inferences and conclusions from the data obtained in making his observations. Considerably more emphasis may profitably be given to this method of learning in all grades of instruction.

The experimental method inductive. As the name implies, experimental learning is learning through one's own experiences. It is a form of problem solving or reflective thinking. It is a searching for actual truths about things and processes, the main value of which lies in the fact that pupils learn through its use to discover things for themselves, rather than having them told by the teacher outright or discovering the answer in some text or reference book. It is a method of learning which has been characterized as the scientific method. The principle underlying the theory holds that pupils must learn to arrive at definitions, processes, operations, and rules through controlled experience,

and not merely by memorizing them from books or from dictation by the teacher. By this method of learning, the pupil should proceed from the particular to the general, rather than from the general to the particular. This makes the process different from the problem method as outlined in the previous chapter in that it emphasizes discovery of truth by the scientific method, rather than simply arriving at truth through the process of reflective thinking alone.

Experimental learning controls the situation. The true essence of experimental learning is found in the possibility of actually controlling the experimental situation and trying out one experimental factor after another until the one producing a certain effect is found. For instance, the experimenter may wish to observe any one of the following factors:

1. What is the effect of introducing water into the carburetor of an automobile?
2. What kind of gasoline is best for ordinary use in my car?
3. What will happen if I push this swing up as far as the eaves of that barn?
4. What will mother do if I stay out later than I did yesterday?

Any one of these problems suggests not only thought but action. It is indicated that the experimenter should do or try something. This is what makes experimental learning supplementary to reflective thinking about problems of various sorts. The thinker may go through the inductive-deductive process until he has the answer to a problem, as far as he can reason it out. Experimentation will enable him to prove whether or not his solution is the correct one. Experimentation is then a kind of adventuring into the unknown and that is what gives it its challenge.

In solving the first of the problems suggested in the preceding paragraph, for instance, the method of the experi-

menter is clear. The thing to do is to get an automobile to running, to get some water, not gasoline, kerosene, or alcohol, to devise a means for introducing this water into the carburetor while the engine is running, actually to introduce some water, and to observe the results. The result observed is the answer to the question. This constitutes a simple experiment that anyone might try. What happens to the learner while such an experiment is going on?

Experimental learning and scientific method. In experimental thinking or learning the experimenter is learning to proceed scientifically. He is going through a process of reflective thinking, but he is checking every step of his thinking by the most objective means he can find. He locates a problem and defines or limits it; he develops a hypothesis or hypotheses as to the solution of the problem; he creates an experimental situation in which he exercises control over these tentative solutions; he tries out the effect of each and measures it; he isolates each one of these factors and keeps it from being affected by others; finally, he comes to a conclusion or fails to come to a conclusion as the case may be. All through this process he proceeds according to certain well-known principles that distinguish the scientific thinker from the non-scientific. He is tentative-minded; he seeks to refrain from influencing the results to bring about a solution in which he is interested; he refrains from bias; he keeps careful records; he is objective; he measures the effect of each of the experimental factors carefully; he draws his conclusions from the data and not from unsupported opinions and prejudices. He learns to proceed as the scientist in the laboratory. Through the process of experimentation, he engages in experimental learning and the outcomes of the process are conclusions—laws, rules, principles, truth that he can use in his subsequent thinking. At the

same time he is achieving a method of thinking, a way of working, a tool of learning and perfecting his ability to use it effectively.

Experimental learning, then, is discovering truth through subjecting problems to controlled action in which the probable answers to the problem are tried out and the true solution ascertained.

The discovery of truth by experimental learning. The chief function of experimental learning is the discovery of the truth—the formulation of a sound conclusion from observable data. It inevitably leads to generalizations, to a principle or a rule. Pupils become more analytical and objective in their methods of investigation and study, for they are required to test critically any hypothesis before generalizing. They learn to organize an actual experiment and to carry out the experimental process. It is quite probable also that pupils retain more permanently what they learn by this method than by other methods of learning. This condition can be partially explained on the supposition that pupils understand a principle or a process better when they discover it for themselves, and that experimental learning is essentially an active process. This is shown in the discovery of the principle of osmosis, commonly demonstrated by the simple egg experiment. This illustrates how the active process of discovering things enables children to understand more fully the practical value of a generalization. Instead of dictating the principle of osmosis to children or having them read it from a book, the teacher should provide an experimental situation in which children may investigate and discover conditions causing the diffusion between two liquids of different densities separated by a permeable partition or membrane. Children thus learn experimentally a principle, a law, or a rule instead of merely

memorizing it from dictation or books. The aim of this method of learning is most effectively realized when pupils tend to try out their hypotheses about things, to read experimental literature, and to apply it to a variety of situations in everyday life. The method should be employed with considerable care, for it is obvious that children can get into trouble through unwise experimenting and that many problems are yet insolvable by this method. Some rules and laws must be accepted without proof. It is unnecessary to repeat all experiments that have been devised to develop principles. Exercises in experimental learning are advisable, however, to introduce the child to one of the most important means of discovering truth.

Appropriate subjects for experimental learning. Experimental learning is possible in almost any subject, but it obviously characterizes the experimental sciences more specifically. In elementary science, geography, general science, physics, and chemistry, the method is properly used. It may also be introduced in the social sciences, but there it is harder to control and perhaps more dangerous. In literature, music, and art it is properly used; also in the industrial arts. True experimental learning requires problematic situations, in which pupils are permitted to investigate and try out the effects of different possibilities with a view to formulating their own solutions. Such subjects as biology, chemistry, physics, and general science contain much material for the experimental type of learning, although these subjects have been traditionally organized for the more formal method of deductive approach. The task of adapting the materials of these subjects to the more modern way of experimental study constitutes an important obligation on the part of the teacher. If the textbooks in use do not contain problems for investigation and study, the teacher must

analyze the materials with the view to creating situations for experimental learning. Examples of materials suitable for the experimental type of learning are suggested below for study.

1. What is the effect of sunlight on paint?
2. Why does the temperature of the air change?
3. How does the oil rise in a lamp wick?
4. What causes frost?
5. What is the effect of freezing on different liquids?

A student might find the solution or answer to any one of these problems in a textbook or by the deductive method without making the necessary investigation to arrive at a satisfactory solution, but it would not be the most effective way of learning the facts. Traditionally, the student would look in his textbook to find a cut-and-dried answer to his problems. He would make little or no effort to search for all the information he could possibly obtain before formulating his answer or conclusion. He would fail to go through the process of discovering the answer to his problem by actual controlled trial.

The experimental process may be contrasted with the deductive process of learning as illustrated by geometry and formal grammar. Illustrations of materials from these subjects are given below for study.

1. Parsing nouns, pronouns, verbs, and other parts of speech.
2. Diagraming sentences.
3. Learning the rules of syntax.
4. Learning axioms.
5. Demonstrating theorems.

In such activities the temptation is to memorize words or, at best, to repeat the type of thinking which was used in arriving at principles and processes. This is a valuable type

of experience, but it cannot take the place of true experimentation. It lacks challenge and it fails to stimulate activity. Experimental learning leads to true discovery and teaches the use of the experimental method which is one of the three or four principal methods of discovery.

Interest and how it functions. Finding out things for oneself is an interesting activity. It becomes more interesting as progress and success are made obvious to the learner from time to time. Usually, it is within the teacher's power to create opportunities for discovery on the part of pupils. If successful investigations are made possible, there need be little doubt but that progress and happiness will characterize school work. Experimental learning requires no extrinsic motivation. It is worth while in and of itself and furnishes its own challenge. It makes unnecessary much meaningless repetition and gives meaning to laws and principles formerly difficult to learn. Experimental learning is its own best motivator because it is natural, purposeful, and active. Extrinsic motivation is neither necessary nor desirable.

Directing experimental learning. The very nature of the experimental method of learning often makes it necessary to omit the assignment in out-of-class study, until pupils have learned something of the technique of experimentation. Careful guidance is necessary during the initial stages of learning to think experimentally. The teacher must direct the process through questioning, comment, and explanation. It may happen, however, that, in the case of some of the less difficult processes, such as the egg experiment, pupils may be given the opportunity to carry on the experiment at home or in the laboratory. The assignment in this particular instance would be to study the directions given in the textbook. These directions would give an ade-

quate basis for independent procedure by the child. But this practice should not be extended to a point where pupils will have to depend entirely on textbook explanations in order to carry out an experiment. There will always be a few pupils in class who readily "catch on," but the great mass of them will have to be questioned on this and that step in the process or operation before they can see through it. The safest plan to follow is to develop with the pupils the technique involved in the process and make certain that they understand it. The assignment following this method of learning is typically a drill or a practice exercise. The pupils may apply the principle learned to other situations, or study the results of the records made and seek to clarify any points which may have escaped them previously.

The interest of boys, particularly, in home experimentation suggests that the teacher should take an interest in practical mechanics and simple chemistry and coöperate with boys to extend their experimental learning in home, shops, and laboratories. Such magazines as *Popular Mechanics*, *The American Boy*, and others furnish much interesting material for outside assignments that may greatly increase the child's appreciation of the experimental method and furnish him an excellent hobby for his leisure hours. Care should be taken, however, to give young children sufficient class instruction and demonstration so that they learn not to try dangerous experiments and to consult their teacher when in doubt. Many a future chemist or physicist may find his life interest in these simple boyhood experiences.

Recitation activities. In experimental learning, as in many other methods of learning, the activities which are suitable for the recitation proper may also be suitable for

the assignment, and *vice versa*. The conditions of learning largely determine whether one type of activity or another can be most advantageously employed as the assignment or as the recitation. Pupils may make observations, prepare materials, attempt solutions of the problem, and verify them as a part of the assignment, or they may engage in these activities in the recitation proper.

In the laboratory work, lecture and demonstration precede actual experimentation. Whatever may be the course of action which the teacher takes, there are certain principles to be adhered to in conducting the recitation in experimental learning. They are:

1. *Demonstrations.* How to do a thing or carry on an activity calls for a demonstration by the teacher to make the performance clear to the learner. A simple experimental technique should be demonstrated, showing the various steps involved.
2. *Discussions.* A discussion of problems, techniques, and materials with pupils for purposes of directing their thinking is essential. This practice permits the class to ask questions concerning their difficulties, to answer questions, and to organize their thinking. They get "clues" and "leads" to additional data, and learn to determine what is important and what is not important, as well as to obtain many suggestions on habits of work.
3. *Evaluation.* The recitation should help pupils to analyze, evaluate, and organize materials; to reject anything which does not bear directly on the solutions of problems, and to include all materials which further satisfactory solutions. This practice calls for a detailed analysis of all materials. It is a sifting process and teaches pupils to react critically to the data gathered.
4. *Conclusion.* This is the culmination of all reflective thinking or reasoning—the arrival at a satisfactory conclusion. It is not, however, the final step in the recitation, but it is the last step of the first draft of the experimental study. It is the result

of gathering data, analyzing, sifting, and organizing materials in such a manner that a correct solution evolves.

5. *Verification.* When a conclusion is adopted by the class as the one most likely to be correct, it must be proved. This may be done in several ways, either by applying it to a new and similar situation or by further experimenting with it. Often a check on the inference can be satisfactorily made by consulting books, people, or authorities.
6. *Application.* This is the final step in all learning. It is the acid test of mastery of an activity or process. How well the learner can use what he has learned is an excellent measure of his practical learning ability.

In the process of getting pupils to discover things for themselves, the question is often asked how much of any experiment should be developed in class with the group. It is impossible to lay down any set rule. This depends to a great extent on the ability of the group to grasp the technique and the principle, and on the nature of the problem or process being investigated. The explanation of an experiment should continue until each individual member of the class fully understands what is to be done. This condition, as was stated above, varies with the ability of the class, as well as with the nature of the experiment.

Measurement. Proof of the success in teaching experimental learning can be quite adequately determined by observing the behavior of children while carrying on the process. Oral and written tests are valuable for purposes of obtaining a detailed check on the knowledge gained through the process. Tests of application of the principles learned are especially appropriate and should be frequently used. Also a student's check-list, such as the following, will be found very helpful in aiding pupils to master the technique of discovering facts, principles, and processes through experimentation.

A Student's Check-List for Evaluating Success in Experimental Learning

Directions. Encircle "YES" if you adhered to or observed any of the following conditions in discovering a problem, principle, or process; encircle "NO" if you did not.

1. Did you find your own problem for investigation? YES NO
2. Did the problem for study originate from class discussions? . . . . YES NO
3. Was it particularly interesting to you? . . . . YES NO
4. Were you anxious to investigate it? . . . . YES NO
5. Did you think that the problem for investigation would develop a fundamental principle or process? YES NO
6. Did you have a plan of investigating the problem? YES NO
7. Did you obtain help from class discussions in formulating a plan of investigation? . . . . YES NO
8. Did you perform your own experiment? . . . . YES NO
9. Did you consult other experiments of a similar nature? . . . . YES NO
10. Did you carry on further experiments to obtain additional data? . . . . YES NO
11. Did you report your data to the class? . . . . YES NO
12. Did you obtain valuable suggestions from the class for further experimenting? . . . . YES NO
13. Did you exercise care in carrying on your experiment? . . . . YES NO
14. Did you make any mistakes? . . . . YES NO
15. Were you able to find and correct them? . . . . YES NO
16. Did you arrive at your own conclusion independently? . . . . YES NO
17. Did you have someone to help you decide on the correct conclusion? . . . . YES NO
18. Did you verify your conclusion by other experiments? . . . . YES NO
19. Did you apply it to see if it were useful? . . . . YES NO
20. Did you remain unprejudiced throughout the experiment? . . . . YES NO
21. Did you follow throughout in detail the experimental method? . . . . YES NO

Outcomes. The chief outcome of experimental learning is the discovery of a principle, process, operation, or technique. This means that pupils must know not only how processes, principles, and techniques are derived, but how to apply them when they are discovered. There are also certain techniques peculiar to experimental learning which the pupils should acquire: ability to locate and define problems, ingenuity in making hypotheses and inventing ways of trying out possibilities, and skill in analysis, evaluation, and conclusion. In addition, the pupil should develop tentativeness of mind and absorb something of the scientific spirit. He should come to understand how truth is derived and should develop a favorable attitude toward experimentation and the results of experimental methods.

Summary. Experimental learning is learning through one's own experiences. It involves a method of searching for truth—of discovering a principle. It is a type of research work which should not be limited to graduate schools alone, for it may be employed in practically every school subject and in every grade of instruction. It includes both the inductive and deductive processes. It follows the scientific method and trains pupils in one of the three or four great methods of discovering truth. It trains pupils in a special type of reflective thinking based upon actual subjection of an experimental factor to control in an experimental situation, thus leading to the understanding of processes and principles mainly through induction. It is a form of activity which is motivating in itself. It needs no artificially created devices for arousing and holding interest. Searching for and discovering new truth is stimulating in and of itself, but the practice demands an unusual amount of care. Typical experimental methods must be demonstrated and sample experimental exercises must be worked out with

the group to make clear the nature of the activity to be undertaken. Class discussions must be encouraged in which problems are discovered, solutions are proposed, techniques are discussed, data collected, critical analysis of the data made, solutions to problems suggested, and conclusions drawn, verified, and adequately applied by pupils. These represent a few of the general class activities in which pupils should engage in the recitation proper. There are also other factors which must be considered in experimental learning. Pupils should be permitted to find out as much as possible about their problems for themselves. Independent work should be done. Assistance should be rendered only when progress begins to lag badly. Pupils must be led to discover the process, operation, or principle. They will best realize their success when it is agreed among all members of the class that the principle or the technique is correctly stated. When the solution is proved correct, the pupils should be required to restate it; then they should apply it; for, after all, this is the final proof of mastery. A check-list is a valuable device for the student to use in evaluating the main steps in the process of experimentation. The final outcome is to be realized in the learner's ability to understand not only how the principle or technique is developed but also how it can be applied effectively to other situations. The method should also lead to an appreciation of the value of the experimental technique.

STUDY QUESTIONS

1. Why should elementary school pupils be given practice in research of a type in keeping with their abilities and experiences?
2. What is the relation of the inductive and deductive processes to experimental learning?
3. Why is it necessary to have a working knowledge of the technique involved in experimentation?

4. What are some principles, processes, and techniques which may be effectively developed experimentally?

5. What phases of the tool subjects of the elementary school are usually developed by the inductive process? The deductive process? Are there any experimental problems in these subjects?

6. What are some problems or phases of the content subjects which may be developed experimentally?

7. What is an assignment which pupils may successfully do out of class in experimental learning?

8. What factors are involved in the technique of getting pupils effectively to discover things for themselves?

9. Why should principles, processes, operations, and techniques be developed experimentally?

10. What are several practices which have been formerly used but should be avoided in developing principles, processes, and techniques?

11. What is the final proof of the mastery of the experimental method?

12. What is the value of a student's check-list in evaluating progress in experimental methods?

13. Why should pupils be taught to review their experiences from time to time in carrying on an experiment?

14. Why should verbal generalizations be related to specific experiences in teaching?

15. What training should be given in the making of experimental records and in the use of experimental apparatus?

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CHAPTER XVIII

Creative Learning

Introduction. Creative learning constitutes an essential phase of every worth-while classroom activity, although the teacher and pupils may not always be aware of it. Its technique is so little understood that the majority of teachers never consciously apply it or seek to develop it. Nevertheless, in spite of the neglect of it common among teachers, creativeness is present to a greater or less extent in all classrooms, even though it is not usually a conscious aim of most teaching. All learning which involves in any sense the creation of a new idea, process, or thing is creative. Creative learning employs inventiveness and imagination; it is purposeful and constructive. Greater emphasis upon creative learning would lead to the development of originality of thought and to greater enjoyment on the part of the learner, for creative activity is a necessary aspect of a happy life. Most teachers need to understand the nature of this activity.

The essential aspect of creative learning. While the creative element may occur incidentally in many types of situations, in this discussion it will be dealt with as an aspect of serious, purposeful thinking and doing. In education creative learning has gone on chiefly in language, composition, industrial arts, music, art, and to a lesser extent in other activities. Wherever teachers and children use creative imagination, creative learning and thinking are being exercised. The essential thing about it is that the learner, through exercise of his imagination and reasoning ability,

is learning to put things together in a new way. He may create a new idea, a new process, or a new product. He may invent a new way of thinking, or he may, through his own efforts, simply recreate what has already been created.

It is not necessary, then, that the creative thinker shall be a creator in the sense that nobody has done the same thing before. The child is creative when he makes the model of a dog out of a piece of clay, if in the process he is not simply copying someone's else dog. He is creative when he makes an original poem, when he invents a phrase, when he makes a doll's house out of a pasteboard carton. Creativeness lies in his doing the thing himself, prompted by his own imagination and his own inventiveness.

Analysis of creative work difficult. The factors involved in creative learning are not easily described for the reason that the steps in the creative process are difficult to analyze and set down. They vary tremendously among individuals. Literature, art, and music abound in examples of the work of creative thinkers, but the technique which the artist employs to produce the poem, the picture, the painting, or the song cannot be known except in an indirect way through a study of the product or through the description of the process by the artist in retrospect. John Livingston Lowes [1] writes of Coleridge:

Coleridge's notebook is a catch-all for suggestions jotted down chaotically from Coleridge's absorbing adventures among books. It is a repository of waifs and strays of verse, some destined to find a lodgment later in the poems, others yet lying abandoned where they fell, like drifted leaves. It is a mirror of the fitful and kaleidoscopic moods, and a record of the germinal ideas of one of the most gifted and utterly incalculable spirits ever let loose upon the planet. And it is like nothing else in the world so much

[1] LOWES, JOHN LIVINGSTON—*The Road to Xanadu.* Houghton, Mifflin, 1929, p. 6.

as a jungle, illuminated eerily with patches of phosphorescent light, and peopled with uncanny life and strange exotic flowers. But it is teeming and fecund soil, and out of it later rose, like exhalations, gleaming and aerial shapes.

The poet gathers his preparatory material from endless sources. His whole life is a preparation for his work, and all his experiences are raw material for creative achievement. Likewise, the child's experiences in school should be a preparatory period of gathering information from all possible sources for later maturing, as well as a period of experimenting with these materials in creative ways. Without a wealth of raw material there would be little for the creative mind to work on. The imagination must have an abundance of material out of which to mold new products. The old must be transformed into the new. This, as one writer [1] puts it, "occurs either as a reconstruction, an integration, an intuition, an abstraction, a generalization, or a transmutation." Experiences must be reconstructed, reorganized, revaluated, transformed, and integrated into entities possessing new characteristics in order that new products may be created.

Another writer [2] discussing originality in art says:

In thinking in the fields of literary, musical, and other artistic productions, familiarity with the products and techniques of the masters seems to be quite as useful as acquaintance with the facts is essential to originality in other fields. In the æsthetic fields the fear that familiarity with other products may cramp or inhibit originality seems to be more frequently and tenaciously held than in business, mechanics, or science, but for no good reason. In the better types of instruction in composition, drawing, design, and the like, more attention is given than formerly to study of good products, to theory and technique. Originality is fed by such equipment; starved by poverty of examples and precedents.

[1] SCHOEN, MAX—*Art and Beauty*. Macmillan, 1932, pp. 35–73.

[2] GATES, A. I.—*Psychology for Students of Education*. Revised edition. Macmillan, 1930, p. 400.

This is a point of view which should be widely accepted by teachers of every school subject without any fear that the child will become a mere imitator of others.

Two major types of creative activities. Creative activities are of two distinct types: (1) those which develop with children more or less spontaneously without directed training; and (2) those which, in the beginning stages of learning, are directed, but gradually develop into original and spontaneous activities. The former type includes playing, acting, impersonating, dancing, singing, and many other similar activities which are often incidentally learned in the child's home and school environs, while the latter type includes, besides these and a host of other activities, those involved in writing a poem or a composition, preparing an oral or a written report, designing a pattern, painting a picture, and the like. Both types of activities may be creative for the learner, depending on whether he has or has not had similar previous experiences. Any new experience may be considered creative for the individual who gets it, regardless of its commonness in the world. Too often this fact is overlooked by teachers with the result that the creative mind of the child fails to respond in all its fullness. The proper stimulation and guidance are essential requisites of creative endeavor. Suitable activities should be furnished to arouse the creative power which is probably inherent in every child, and these should constitute a liberal program of work, free and unhampered by the teacher and other agencies. Opportunities for creative learning should provide generously for children to project themselves forward independently in their daily work without too much limitation from the school and teacher.

Creative activity its own reward. Creative activity is employed for purposes of producing either a new product,

a new type of organization of materials, or a new way of thinking. In either instance the learner usually has some definite objective which is satisfying in itself. He creates for the pure joy of creating. He writes, draws, paints, and composes solely for the enjoyment that he can obtain from the practice. This is not, however, generally characteristic of most school work, but it is often engaged in by children when they are not employed at the regular routine of the school. The practice should be encouraged under such conditions that some educational value will result from the activity.

When work is creative. Generally speaking, whether or not school work is creative depends largely on the type of activity undertaken by the class. If the class enterprise is composing a play to be dramatized, preparing an oral or written report, composing a poem, or making a design, the work will be largely creative, and children will purpose, plan, and evaluate in order to produce the best possible results. Likewise play, with all its spontaneous original action, is creative. Learning is creative when the child is expressing himself in various ways. This is active learning. The contrasting type is the imposed memorization lesson of the traditional school where children had no responsibility and exercised no initiative. Creative learning is engaged in for its own sake. If in the process of learning children discover the need for better tools and equipment, well and good. But this type of learning should not be regarded by the teacher merely as a means to success in the development of skills of various kinds, but rather as a type of experience essential to true learning or change in the conduct of the individual; for creative learning is creative expression and creative expression is an essential to healthy and happy living. In brief, when a child undertakes an activity, plans,

organizes, and completes it, he is doing what is creative work for him, regardless of whether it is a purposeful activity of the work type or one of pure relaxation and enjoyment.

Fields for creative work. Creative work may be successfully undertaken in any school subject where problems and projects may be found and organized or where operations, processes, and techniques are to be developed and used. Writing a poem, painting a picture, sketching a cartoon, preparing a report, designing a pattern, understanding a process or operation, learning the use of a language, applying a technique, and, in fact, learning new things of all sorts and applying them in new ways, constitute a group of activities which involve considerable creative endeavor on the part of children. Wherever children are allowed to purpose and plan, a certain amount of creativeness will always be involved. Every school subject offers possibilities for doing something new to the alert child. Literature, art, and science are particularly rich in supplying materials for creative work. Materials of geography and history can be reorganized in the form of projects and problems to challenge children's creative powers. Any subject which requires the learner to organize his thinking develops creative ability.

Inherent interest motivates activity. Creative activity is usually the most inherently interesting type of educational experience that children have. The very nature of it seemingly appeals to their inborn urges. The desire to construct and devise finds gratification in creative work. The boy who builds a viking ship lives the experiences of the pirates of the Northland. And in living these experiences, he is stimulated in a large measure to greater effort. Give him a paper and pencil with a few suggestions as to what might be done with them, and he will draw pictures, sketch cartoons, make designs, figure, scribble, and the like with a

great deal of satisfaction and ease. To achieve something new for him is satisfying and a powerful stimulus to forge ahead. Activity is interesting and worth while for its own sake. The most effective motivation invariably results from those activities which are inherently appealing to children. Thus it is important that the teacher recognize this fact from the very beginning of creative work.[1]

Independent work directed. In creative activity, the assignment is obviously a proposal to create something of a purposeful character. The teacher or the pupil may make the proposal. The student undertakes to engage in the activity. The teacher helps him to plan and organize the activity and get it under way. In this process, she may direct him to materials or suggest the necessity of some kind of preparation for the activity. In this sense she may be said to make an assignment. The nature of the assignment, however, differs greatly from that in more coercive teaching. Children undertake tasks voluntarily. They have a much larger share in planning and organizing activities than in older types of teaching. The assignment as a job or task often interferes with rather than encourages creative work. It approaches the routine and is not conducive to originality. Well-organized suggestions about interesting activities will often stimulate children to begin a piece of original work. It is not unusual to find them displaying originality at the sight of pictures, designs, patterns, cartoons, and mechanical devices. Demonstrations and illustrations, accompanied by interesting descriptions and explanations, are valuable in initiating creative activity. The assignment in this type of work is best made when it gives an opportu-

[1] The interested reader will find it profitable to read Hughes Mearn's *Creative Youth* in connection with this chapter, in order to see how pupils are stimulated to write and compose original productions in a creative school environment. See bibliography at end of this chapter.

nity for pupils to exercise their originality in dealing with life in its various aspects.

Class activities. The recitation activities of creative teaching consist largely of purposing, planning, discussing, demonstrating, and organizing materials in preparation for new experiences; in writing, composing, acting, performing, or in some other similar activity; or in exhibiting, evaluating, and discussing the product of creative effort. In any case the recitation is a coöperative group enterprise. Much opportunity for free discussion is essential. At times, the recitation is a work period in which children are actually writing, drawing, sketching, painting, designing, or constructively making something under the sympathetic guidance of the teacher. At other times, it is a coöperative conference for mutual criticism and suggestions of a helpful character. In no case is the recitation merely a period of reciting what has already been learned. It is a time for stimulating and initiating activities through talks, demonstrations, illustrations, readings, and action. When pupil-activity is in progress, the teacher's work will be to guide, suggest, encourage, and render whatever assistance she deems essential to continued progress. She leads by her skill in understanding her pupils and by suggestions rather than by commands. The recitation period then becomes a time of rich interchange of ideas, of sympathetic appreciation, and of group planning for future activities. The old idea of the recitation is supplanted by a new procedure requiring purposing and planning, evaluating and discussing—voluntary activity—instead of prying, questioning, and examining in an effort to get children to repeat the words of the textbook.

Four stages in the creative process. One writer[1] recognizes four stages in the creative process. They are the

[1] SCHOEN, MAX—*Human Nature.* Harpers, 1930, pp. 324–36.

stages of preparation, of incubation, of illumination or inspiration, and of verification.

In the stage of preparation, the student gathers his materials from wide reading and extensive exploration. He searches for information from every possible source. Sometimes this seeking for something is deliberate as in scientific work, but more often it is accidental and incidental without any conscious purpose. It is a period of gathering the raw material for future use in an auspicious moment.

In the stage of incubation, the student unconsciously elaborates what he has gathered in the previous period. His attention is usually on something other than the ultimate outcome of his mental activity. He enjoys a period of idleness and fruitlessness after browsing around in the various sources for raw materials.

In the stage of inspiration, the student is more or less aware of the solution of the problem or situation, although what it is to be is not yet known. He begins to feel that the results of his efforts are near completion. What has been largely unconscious is now revealing itself in the form of something new and unexpected. A new idea begins to appear above the horizon. It is maturing into something very definite.

In the stage of verification, the student subjects his new idea to a rigid systematic reasoning process. He makes a conscious attempt to prove or disprove the value of its existence. He culminates his creative endeavors by reasoning and deliberating on the product attained through his imaginative efforts.

The above formula is not a rigid one to be followed in creative work. It is merely suggestive and will be found helpful to the alert teacher who is attempting to guide creative activities.

Evaluation of results. The accomplishment of a finished product constitutes the test of ability to create. In writing and composing, the end-result of pupils' efforts may be a poem; in manual arts, a design; or in some other fields, a product possessing something of an original character. The quality of the finished product varies greatly with different pupils, and is measurable, to a large extent, in a comparative way. That is, each pupil's composition may be compared with those of others or with some established norm. If the resultant product of the pupil's efforts has been some concrete object, a more exact measurement may be made. For example, if the pupil has made a piece of furniture, the rule or square may be used to check on the accuracy of the labor, or a score card may be devised and used to measure the general quality of the product. Usually, finished articles in those fields where concrete things can be made are subject to more objective measurements than the products in the more abstract fields of work. Teacher-made tests of a factual nature may be devised to supplement other types of tests as it becomes necessary and practical from time to time. These tests may be made up as an outline, a design, a diagram, or in some other appropriate form for elaboration by the pupil. The score card on page 355 is suggestive of a helpful measuring device which may be satisfactorily employed by the pupil in checking on original productions.

Outcomes. The most significant outcome of creative endeavor is not to be found alone in the finished product of that endeavor, but rather in the many abilities acquired in producing that product and in the satisfaction derived from the activity. In other words, children develop expert skill through successful practice in creating something. They learn to plan, to compose, to initiate, to undertake, to or-

A Student's Score Card for Measuring the Success of Original Productions

Directions. Assign ten points to each characteristic of the product, which represents skill and originality; assign zero to any characteristic which reveals nothing original; and assign points ranging between these two extremes to those characteristics which possess little to much originality.

Characteristics of Original Production	*Perfect Score*	*Student's Score*
1. Appearance or general effect: original and pleasing	10	
2. Design or model: original, practical, effective, and artistic	10	
3. Workmanship or skill in production: skilled, with original touches; unskilled with original features	10	
4. Elaborateness of production: much original thinking as well as extensive searching for raw materials indicated	10	
5. Usefulness of production: can be used for practical purposes; nothing like it has been created; it fulfils a need	10	
Total score	50	

ganize, in fact to develop all those important abilities involved in creative production. Creative activities are not only interesting ways of reaching desired objectives, but they are also worth while for themselves alone. The pure enjoyment which children obtain from creating something, even though it be a picture of their teacher, is often a great stimulus to other activities of a similar character.

Summary. Creative activity results in new products or in new forms of organization. The new product may be something very concrete, as a new dress, a book shelf, a mold, a

compound, or some other material object; or it may be something more abstract, as a pattern, a design, a poem, or a song. At times it may take the form of a new idea or a new reaction, which is more abstract than any of the previously mentioned products. Creative activity may also result in new organizations of compounds, patterns, poems, songs, or ideas. In fact, all learning is creative in the sense that it evolves new thoughts and actions. Otherwise, there would be no true learning. Reacting and doing would be scarcely anything more than merely marking time. Purposeful, creative learning calls for teacher guidance or directed training, at least in the beginning stages. Writing a poem, designing a pattern, or making a new dress are examples of activities which often require considerable guidance. The more or less spontaneous activities such as playing, dancing, singing, and the like require little or no guidance after they have been correctly initiated. Music and art furnish materials for these latter types of activities, while literature, language, industrial arts, and several of the abstract school subjects provide the source of materials for the former. Yet almost any field of subject matter offers an abundance of opportunities for creative work. Practically everything is new to the individual who has never done it before. At least, an activity is new to him who has never engaged in it at some previous time, even though others have been familiar with the activity for many years. "There is nothing new under the sun."

The course of action which the teacher should take in developing creative ability among children should be determined largely by the aim or objective which is apparent to the children. If children are to create for purposes of enjoyment, there will be little or no need of directed training in the sense of rendering specific guidance to their ac-

tivities. They will act, perform, write, paint, or sketch freely without the usual supervision given to the more purposeful type of work. If, on the other hand, children are engaged in creative work of a more difficult and purposeful character, considerable guidance may be rendered by the teacher, but not so much that their originality will be suppressed. Their activity must not, at any time, be hampered by routine ways of doing things. Sympathetic coöperation, accompanied by suggestive remarks and illustrations or demonstrations, is usually sufficient to encourage children in their creative endeavors. They should learn to recognize original productions either through skillful observation or by the use of a score card or a self-checking list.

STUDY QUESTIONS

1. In what sense is all learning creative?
2. What are several creative activities in which children may engage without direction?
3. To what extent may creative activity be employed as an end in itself?
4. What is the significance of wide experience in creative work?
5. What is the value of a notebook, such as Coleridge kept, in creative work?
6. What are several specific activities in which children may be engaged in producing a story? A design? A cartoon?
7. When is a thing creative for a child?
8. What is the criterion of creativeness for school children?
9. What may be the effect of demonstrating to school children how a pattern is made or how a cartoon is sketched?
10. In what sense are assignments not made in creative activity?
11. Why is sympathetic coöperation so necessary in creative work?
12. What are some valuable suggestions for encouraging children to purpose and to plan?
13. How may creative endeavor be most successfully measured?
14. What are several abilities developed through creative endeavor?

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CHAPTER XIX

Appreciation

Introduction. Appreciation is a form of activity which is so intimately associated with the emotional side of life that it is necessary to find a process or technique other than that usually employed in teaching to develop its various aspects. It is widely agreed that it can be learned. That conventional classroom practices are too formal and analytical to foster appreciation, is not always obvious to teachers. There is probably no other type of school activity that has been so misunderstood, misapplied, and subjected to so much formalism as activity in which appreciation is the chief and ultimate aim of teaching. This is unfortunate. The situation presents a challenge not only to the teacher of art, music, and literature, but also to the teacher of science, history, and mathematics. Naturally these questions arise: What can be done about improving this condition? Can appreciation be taught? Why do teachers of art, music, and literature have so much difficulty in getting children to appreciate their subjects? Can children learn to appreciate science, history, mathematics? These and a number of other questions will be discussed in this chapter.

The meaning of appreciation. That appreciation cannot be taught in the same sense that facts and skills can be taught is more or less apparent to thoughtful teachers, but that a foundation upon which appreciation may be developed can be furnished is generally believed. The possession of a wide vocabulary or an extensive knowledge of the technique of writing carries no assurance of an appreciation of

composition and rhetoric; but an understanding of the technique of and skill in writing may be helpful in gaining an appreciation of the subject. To this extent appreciation of composition can be taught. Yet one may appreciate the use of a mathematical formula, such as that for finding the cube root of numbers, without knowing or understanding how it is derived. However, a knowledge and understanding of its application to a variety of situations in attaining a desired product or goal may, after all, be the real cause for the appreciation of the mathematical formula. Few will deny that knowledge and understanding are relevant factors in developing appreciation. They are, without doubt, the basic elements for a greater appreciation of the formula. But they are no guarantee of appreciation. Mere familiarity with the facts involved in developing techniques and formulas may add little, if anything, to one's appreciation of mathematics. Neither may the mere acquaintance with the facts of history or their memorization further one's appreciation for that subject. Facts and informations must be integrated into a meaningful whole and applied successfully before the learner begins to *appreciate*, or feel, that they are really significant. It is this feeling of the learner that constitutes the distinction between simple comprehension and appreciation. When one realizes that the facts, informations, and techniques with which he is concerned are useful in attaining a desired end or goal, he begins to appreciate their significance and value in solving problems, in formulating projects, and in studying subject matter of textbooks in general. He appreciates what he understands and can use to advantage in reaching desired goals or achieving desired products.

Three classes of appreciations. There seems to be a difference of opinion among writers as to the classes into

which appreciations fall. Thomas [1] mentions three distinct classes of appreciations: the æsthetic, the intellectual, and the social. Strayer and Norsworthy [2] mention, in addition to these three, a fourth one, the appreciation of humor, which Thomas believes is a component of intellectual appreciation.

Two aspects of appreciation. However one may regard appreciation, it seems probable that its chief aspects are the æsthetic and the intellectual. The æsthetic aspect of appreciation deals with the beauty in experience. It is an appreciation of the pure form of what is observed, what a thing is in itself, without attributing meanings, values, and uses to it. For, to quote from Schoen: [3]

> When the mind begins to describe, to explain, to evaluate, to relate, to interpret and judge, attributes are created which originate from the object but are not of the object. But during the moment of beauty the object is stripped and cleansed of all its impositions and vestments ordinarily imposed upon it; it is present to the mind in all its naked purity, shorn of all adornments with which more ordinary experiences are burdened and disguised.

An experience is no longer one of beauty when analytical judgment is exercised. It becomes an intellectual activity of one's own making, and belongs to another aspect of appreciation, the intellectual. Then study and problematic situations will be the chief concern of the learner. The whole process of appreciation here differs entirely from the æsthetic aspect. The learner meets a perplexing situation; defines and limits it; searches for clues to the solution or formulates hypotheses; works out the implications of

[1] THOMAS, F. W.—*Principles and Technique of Teaching.* Houghton, Mifflin, 1927, p. 41.

[2] STRAYER, G. D., and NORSWORTHY, N.—*How to Teach.* Macmillan, 1917, pp. 126–37.

[3] SCHOEN, MAX—*Human Nature,* Harpers, 1930, p. 259.

the several hypotheses; and finally tests the hypotheses by comparison with objective facts. This is sometimes referred to as the reflective process and is described by Dewey in *How We Think*. It is purely intellectual.

Appreciation, therefore, if the writers' analysis is accepted, is both emotional and intellectual. It is gained through experience and is often caught rather than taught. The important thing to be noted is that it is an outgrowth of experience with the thing itself. A wealth of æsthetic or intellectual experience is the necessary matrix of true appreciation.

Appreciation an outlet for emotion. Æsthetic appreciation is commonly applied to those activities or products of activities that are engaged in as ends in themselves, in contrast to activities or their results having an aim beyond themselves, which may be useful but not beautiful. It is probable, however, that the appeal which this type of appreciation makes to the emotional side of pupils' lives may be an important motivator of their school work. In this sense, æsthetic appreciation might be considered instrumental in getting the desired emotional set for subsequent study of a more intellectual nature. But this is not the chief function of appreciation. It is a subsidiary aim only. The real purpose is to give pupils an outlet for their emotional experiences.

Teachers of English aim to develop in pupils not only an appreciation of the content of literature but also an enjoyment of beauty, style, form, and rhythm. The teacher of reading strives to emphasize the ability to comprehend the printed page plus the ability to appreciate the style and diction of the writer. Likewise, teachers of art and music aim to develop an appreciation of the beautiful as well as an understanding of technique.

The intellectual aspect. The intellectual aspect of appreciation is common, however. It may be developed in geography, history, science, and in other abstract school subjects. It is not without its emotional aspects, but it is primarily concerned with understanding. The student may appreciate the significance of an invention, an historical character, or a movement in history only when he thoroughly understands it; he may appreciate phases of these and other activities without a comprehensive grasp of the conditions causing them. The latter is doubtful. This type of appreciation may be accompanied by an emotional glow involving a feeling of pleasantness or unpleasantness, but it is a purposeful thing as compared with the more sensorial and incidental pleasure derived from æsthetic experiences. It is, therefore, important that the teacher provide opportunities in all school subjects for æsthetic as well as intellectual experiences.

Appreciation in the curriculum. It is not an exaggeration to say that appreciation may be involved in practically all the subjects of the school curriculum. Even mathematics may be taught for appreciation purposes, although it is not so clear that this field of study ordinarily lends itself to this particular type of experience. Who has not had occasion in his later years to apply a simple geometrical formula, learned in school, in marking off a tennis court, a baseball diamond, a basketball court, or to measure a square or rectangular area in the yard or garden? To be able to employ mathematical techniques to do something of this sort without having to inconvenience oneself to ask someone who may know how to do the work increases the appreciation of the user for practical mathematical knowledge. He sees the significance and value of mathematics. That increases his intellectual appreciation

and at the same time favorably affects his feeling toward the subject.

Literature offers the greatest possibilities for the development of æsthetic appreciation among the masses of school children. Next to literature, in order, may be mentioned art, music, science, geography, and history. But literature, art, and music are the subjects in which this type of experience predominates. Intellectual appreciation will probably be most effectively developed in the subjects of science, geography, history, mathematics, and in the other abstract school subjects. In fact, wherever problematic situations may be found, the intellectual aspect of appreciation will be involved. It is possible, however, that both aspects of appreciation may be successfully developed in any one subject or group of subjects, depending on what the teacher is emphasizing.

Interest and appreciation. Interest in any type of classroom exercise or in any subject regardless of its nature depends, to no small degree, on properly setting the stage to obtain the desired responses from the student. Skillful teaching is marked by getting pupils in the right sort of emotional set to forge ahead even though it is relatively a passive state which is desired. This condition may sometimes be successfully accomplished by relating incidents connected with the scene or character of a literary production, thus giving the pupils those experiences which constitute a portion or all of the background of the subject under consideration. Pupils may learn to appreciate the masterpieces of art and literature only to the extent that they understand the conditions under which these were produced. Likewise, in other fields of study, pupils learn to appreciate and to become interested in the master productions of these fields when they understand the conditions under which the great minds of the world functioned.

The first impression. According to one writer [1] the first impression of a poem, a song, a picture, or a building is a privileged impression in the sense that it is more spontaneous and more intense, as a rule, than any subsequent impression. This does not necessarily mean that the first impression is the most lasting one in every instance, but rather it means that the first impression largely determines our likes and dislikes, our predispositions and prejudices toward the object, person, or thing. Yet it is a fact that when an impression is attended by an emotional glow, it lingers with us indefinitely.

Anticipation and interest. Anticipatory interest or excitement is an important factor in motivating the appreciation activity. If, for instance, a new poem is to be taken up with the class or a new story is to be dramatized, the teacher should take measures to arouse the expectation of the pupils long before she initiates these activities. She may render brief personal anecdotes, create inspiring news items, devise with the class posters for display, or she may manipulate other lessons in the interest of appreciative expression. That is, she may take a character or an episode from history and tell the class that on such and such a date they shall learn some interesting things about a great man or a crucial event in American history. It is much worth while to employ this element of anticipation in teaching, providing the technique is changed from time to time in arousing the expectation. The practice of motivating school work through natural or artificial means, as well as other similar practices may, however, become very monotonous to children through abuse.

The desire to know and intellectual appreciation. Interest in intellectual appreciation probably arises from the

[1] HAYWARD, FRANK HERBERT—*The Lesson in Appreciation.* Macmillan, 1915, pp. 2–4.

desire to know or to be familiar with the things which we believe to be useful and practical. The problem attitude is often helpful in arousing a desire to appreciate such a development as the Einstein theory. Among children a desire to understand how a gasoline engine works may be aroused by discussion and by asking questions about it. In a like manner, other problems may be attacked and solved. The by-products of such study are primarily intellectual in nature, but they are often accompanied by an emotional glow of some kind.

Out-of-class work. In æsthetic appreciation, the out-of-class assignment—if made at all—should function to create greater enjoyment in the project or activity of the recitation. References need not necessarily be definite and detailed, as this practice in making assignments detracts from the pleasure of the activity. Any kind of assignment which adds to anticipatory interest should be encouraged. This may consist of writing a little news item, making a poster, reading anecdotes, cartoons, and the like. The teacher may suggest questions about the beauties in literature, art, and science and permit children to find them out for themselves; or she may stimulate search for the exquisite and beautiful aspects of life as described in literature and science. It too often happens that children's interests in appreciative activities are inhibited by the use of assignments on the work level. Enjoyment is, therefore, reduced to a minimum. Assignments are tasks rather than inspirational activities. An effective assignment in literature may be made by indicating extensive readings for purposes of getting those experiences necessary for a more complete understanding and appreciation of an author and his works. It will thus serve as a means of inspiring children toward the desired emotional set for appreciating the sub-

ject or activity. Guidance will be necessary, but it will be of a different sort from that given pupils in the intellectual type of appreciation. Here the assignment can be more detailed and provide more guidance, as in a study-guide sheet for the study and preparation of data concerning an historical epoch, a scientific invention, or a geographical area. These and other similar problems will require assignments on the work level.

The discussion period. The recitation or discussion period in lessons of the appreciation type may be taken up with a variety of activities—assignments, discussion, listening and observing, or performing for the benefit of others. In the æsthetic appreciation period, the recitation often becomes a period of participation in art, music, or literature. The teacher reads or recites, the pupils take part in singing, dancing, or other æsthetic experiences. This type of experience is more relaxed and experimental than the intellectual type of appreciation as it is developed in the study of literary, social, or political history, or geography. There is not here the serious study attitude often found in other types of activity. To make æsthetic experiences hard work is to kill joy in them. Teachers often make the mistake either of talking the subject to death or of treating an æsthetic experience as if, like important factual information of a practical character, it were a suitable subject for drill, examination, and grading. Beauty speaks for itself. Pleasure is justified for its own sake. It is a very clever teacher who can introduce a poem in such an effective fashion as to add to the effect produced by the poet. Nevertheless, information is often essential and must be given as a prelude to or immediately following the æsthetic experience. Discussion and evaluation are also desirable. The teacher should attempt to get genuine expressions of appreciation from

children. Often, however, there is little need for anything except the most delightful kind of participation in an enjoyable experience.

When the object of the recitation is to develop an appreciation of the intellectual type, more explanation, questioning, comment, and discussion may be essential. Appreciation should come as a by-product of a serious problem solving or other intellectual activity. The study of the life of a great historical character, of a chemical process, or of a technique in drawing, singing, or other arts may involve the most serious kind of intellectual effort. Appreciation comes with understanding. Often recitations of the appreciation type will involve hard intellectual work and may be problematic in character.

Sometimes appreciation is best gained by experiencing or doing. Listening to a concert or a speech, viewing an exhibit of paintings, playing an instrument in an orchestra, or taking part in a chorus may be the surest means of developing an appreciation for the beautiful.

The recitation may be concerned with all these things.

Suggestions for teaching an appreciation lesson. Hayward[1] gives a number of valuable suggestions for the teaching of an appreciation lesson of the æsthetic type. Several of these are summarized below:

1. Create an opportunity for a privileged impression; that is, have the first impression an intense one.
2. Create an anticipatory interest in the poem or painting—work up excitement.
3. Bar all distractions—such as poor physical conditions, hard words, bad techniques, etc.
4. Group ideas together; that is, reinforce crude admirations by means of such intellectual elements as interpretation, memories, contrasts, etc.

[1] HAYWARD, F. H.—*Op. cit.*, pp. 9–[illegible]

5. Employ familiarity to enhance the pleasurableness of musical passages.
6. Have pupils repeat beautiful verses and selections. Rime is important, so also is rhythm.
7. Have pupils learn some things by heart. This practice can be overdone, but it is much safer to know a few things by heart than not to know them at all.
8. Provide opportunity for intellectual discussion or the exposition of meaning. While this practice does not ordinarily fall under the category of æsthetic appreciation, nevertheless it is important in getting a better understanding of the passage.

Appraisal of appreciation difficult.[1] It is difficult to measure the degree to which one gets an appreciation of anything, although it is more or less obvious that some pupils have greater sense of appreciation for things than others. This fact is observable in children at play. The standards must be, by their very nature, comparative ones and largely matters of personal opinion. Oftentimes, children best show their appreciation toward things and activities while engaged in playing their favorite games, in singing songs, in reciting poetry, and in other kinds of activities. Their likes and dislikes are more or less apparent to the careful observer. But it is very difficult as yet to measure these qualities with any degree of objectivity, and it is doubtful whether it is necessary to measure appreciation when the chief purpose of the activity is either for the pure enjoyment of the beautiful things of life or for an intellectual experience for its own sake.

Outcomes. Participation in the activities of æsthetic appreciation furnishes children with those experiences which are essential in developing a love for beauty, style, form, and rhythm in art, music, and literature. These activities also may furnish experiences which result in likes, dislikes,

[1] See the *Carroll Prose Appreciation Test.* Educational Test Bureau, 1932.

tastes, resentments, prejudices, and other feelings and emotions. All these experiences are involved in developing high standards of conduct and right living. Æsthetic experiences either lift us above the commonplace things of life or let us drop below this level.

The more purely intellectual appreciative experiences find an outlet in the study of problematic situations in which ability to comprehend and understand is involved to the fullest extent. The outcome of intellectual appreciation is deeper understanding of the values and significance of persons, objects, and events. Intellectual appreciation does not necessarily affect the conduct of the individual or lead to action.

Summary. The two principal aspects of appreciation are æsthetic and intellectual. The characteristics of the former are to be realized chiefly in art, music, and literature and in the related fields of knowledge, while the qualities of the latter are developed in contacts with science, history, and mathematics. However, art, music, and literature are not to be excluded from this list of the more purely intellectual activities. The one type of appreciation, the æsthetic, is chiefly concerned with the beautiful in life, and is an activity engaged in for itself alone. The other type of appreciation, the intellectual, is an activity having an aim beyond itself, which may be called useful but not beautiful. The activities of each type may well serve the purpose of initiating and stimulating subsequent learning activities.

In æsthetic appreciation, the assignment should aim to inspire pupils to read, to talk, to listen, to memorize, to sing, to articulate, and, in short, to get the proper emotional set for enjoyment, or to develop an anticipatory interest in the activities which are to follow. In the intellectual

type of appreciation, the assignment should be no different from that for project work, problem solving, general discussions, or similar activities. In order to enjoy a beautiful piece of art or a selection of music or literature, pupils should engage in observing, listening, singing, dramatizing, riming bits of verse, and similar activities. They should be primarily concerned in describing, explaining, criticizing, evaluating, and exercising critical judgment in the intellectual type of appreciation activity. Problems and projects often form the basis for such activity. These modes of expression tend to develop greater appreciation not only for the beautiful things of life but also for the less beautiful, more practical, and more useful things.

STUDY QUESTIONS

1. Why is conventional classroom practice usually ineffective in developing appreciation?
2. What are the chief characteristics of æsthetic appreciation? Intellectual appreciation? What is an example of each aspect of appreciation?
3. Why can appreciation not be taught in the same sense as facts and skills?
4. What is it that makes a poem, a painting, or a selection of music most beautiful?
5. What aspects of appreciation require concentrated drive? What part is more experimental or sensory?
6. What subjects are particularly suitable for developing æsthetic appreciation? Intellectual appreciation?
7. How might appreciation for a poem be strongly motivated for children?
8. What are the chief features of an assignment for teaching appreciation?
9. What are some of the activities in which pupils may profitably be engaged in learning to appreciate a painting? A poem? A mathematical formula?

10. How might one proceed in the matter of finding out children's likes and dislikes? Their respect and disrespect for objects, persons, and things?

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PART IV

THE MEDIA OF TEACHING AND LEARNING

TECHNIQUES AND ACTIVITIES OF COMMUNICATION USED IN TEACHING AND LEARNING

A large part of learning is fundamentally linguistic. In order to acquire ideas, language is essential. In order to instruct the young, the adult must use language constantly; in order to learn, the young must utilize language. Learning and teaching are conditioned by and consist in part, then, of gaining control over and using the language tools. Commonly the language of the school involves conversation, story telling, discussion, reporting, recitation, dramatization, and reading. Each of these activities involves the use of special techniques in certain typical activities. It is necessary that the student of teaching and learning shall come into contact with these activities and learn the best ways of using them effectively. Part IV discusses these activities and the techniques employed in them in the light of their newer usages. Successful control of these activities demands special knowledge and skill from the teacher. This knowledge and skill will be used constantly in directing the integrated activities of the school. At times, however, the teacher and pupils will make specific effort to improve their control of these techniques directly.

CHAPTER XX

Conversation and Discussion

Introduction. A study of the history of communication among the peoples of the earth discloses many related forms of oral expression. These may be indicated as talking, conversing, discussing, arguing, debating, story telling, lecturing, singing, laughing, weeping, crooning, yodeling, etc. It will readily be seen that some of these descriptive terms are merely synonyms of others, while a few of them are sufficiently different in their essential elements to permit of a distinct classification. The very fact that conversation and discussion have been so closely associated in common usage with many of these other forms of oral expression makes it somewhat difficult clearly to distinguish them from other forms without confusing the reader. While it will be conceded that conversation is a phase of a number of other forms of oral expression, it is believed to have enough distinct features of its own to justify treating it as a special type of learning activity. Discussion also is a more serious form of conversation. As a means of acquiring information and as a natural means of communicating ideas and experiences, these techniques deserve special study. In this chapter, some of the important aspects of these forms of oral expression will be considered.

Definition of conversation. Conversation is a tool both for learning and for imparting ideas. Webster's *New International Dictionary* defines conversation as an oral interchange of sentiments or observations. The difficulty with this definition is that it does not make a distinction

between conversation and other forms of oral language expression, such as relating incidents, arguing, discussing, and story telling. It may be defined as a friendly, informal discourse carried on in the form of dialogue between two or more individuals in their natural tone of voice. The word *dialogue* may be objectionable since it implies something formal, or something to be memorized and reproduced verbatim by pupils. The dictionary meaning of a dialogue is a written composition representing two or more persons conversing or reasoning. In the absence of a better word, it may be employed with a somewhat modified meaning. In this discussion, therefore, conversation will mean oral communication of one's ideas and experiences with others, or the exchanging of experiences between two or more individuals in an informal way. Discussion is a special form of conversation. Since large groups lessen the opportunity for every member of the group to participate, the number of pupils engaged in conversation at any one time should probably be limited to three or four, or to five or six at the most. However, the number indicated here is largely a matter of personal opinion.

Uses of conversation. Conversation may be used for several purposes, depending on whether it is conceived as a means to an end as employed by the teacher, or as an end in itself as used by the pupils. As a teaching device, some of its functions may be to detect errors in speech, to reveal the size and quality of pupils' speaking vocabularies, to extend and refine language habits, to develop habits of listening, coöperation, and accuracy, and to carry on an informal visit. As an activity, conversation has for its chief function to enable children to share ideas and experiences with others, either as a means of recreation or for more serious purposes. In using conversation as a teaching technique,

the teacher will find it helpful to keep the following guiding principles in mind. They are quoted verbatim from the *Twenty-Fourth Yearbook.*[1]

1. Provide abundant opportunity for pupils to talk freely about matters in which they are keenly interested.
2. Obtain freedom and spontaneity in speaking at all times. Avoid the restraint that results from frequent criticisms.
3. Provide real motives for speaking and genuine audience situations.
4. Encourage pupils to speak freely and naturally, at first in relatively short units, if necessary. Later aid them in presenting longer series of ideas in good sequence.
5. Encourage pupils to use whatever new words fit naturally into class discussions and activities.
6. Present good models of enunciation and pronunciation at all times.
7. Depend primarily on the imitation of right models in correcting and refining the speech habits of pupils.

These principles are as applicable to any other form of oral expression in which pupils are getting work and play experiences as to conversation. What ones should be emphasized depends on the purposes for which the conversation is used.

The sources of ideas. The subject matter of conversation is largely determined by the objectives set up. The subject should always be interesting and within the experience of children. It may deal with literature, history, geography, science, or any other school subject. The subject matter may be simple or technical. The fatal error is to attempt to direct conversation on subjects that neither teacher nor pupils know anything about. Such subjects as *Our Autumn Games, Winter Sports,* and similar topics, do

[1] National Society for the Study of Education—*Twenty-Fourth Yearbook,* Part I, p. 29.

not seem very promising, but *Babe Ruth, a great ball-player,* might do. Furthermore, children feel freer to talk about those things which are closely allied with their experiences and needs. The custom of selecting fables and fairy tales exclusively for conversation, and of having children impersonate the characters is often overdone. It is an interesting experience for very young children to impersonate conversations between plants and animals, but these experiences are not of real life and are of only ephemeral interest. There is plenty of more significant and real material for conversation and discussion to be found in the child's daily life at home and at school. Greater use should be made of the following sources and types of materials:

1. Children's home environment
   a. Animals
   b. Plants
   c. Sports
   d. Games
2. Children's school environment
   a. Books
   b. Charts
   c. Maps
   d. Sports
   e. Games

It is very important that children be given an opportunity to select the topics for conversation, for they know best what they would like to talk about. They will talk or converse freely about the things in which they have had an abundance of experiences. The home environment is usually rich in materials for conversation among the younger groups of children. The school environment later offers enriched opportunities for conversational topics. The advantage of this practice of employing the children's local environment

for sources of materials lies in its stimulating effect on pupils' activities.

Making conversation interesting. True spontaneous conversation needs no artificial motivation. The conversation period should be concerned with the experiences and needs which are as real to children as those about which they talk in their play and various transactions about the home. In their experiences out of school, children are interested in seeking the things they really want. They seem to find, make, or fall into situations outside of school which lead to natural conversation. Usually the desire to share their ideas and experiences with others leads pupils to tell the "news" to their classmates. All that is needed is a friendly audience.

One text [1] reports that a fourth-grade teacher motivated a conversation lesson in the following manner:

> "How many of you have a canary bird at home?" As she had expected and hoped, some had such a pet and others had not. She said, "Tomorrow, those who have a canary will have an opportunity to talk about it. In the meantime please think over what you would like to say that will interest those who do not have one."

This is a good example of the customary way of motivating exercises for children. It is scarcely detailed enough to be effective. More time is generally necessary to develop a real interest in a subject. One can readily see the value of such a motivating scheme, however, if sufficient time is taken to encourage children to talk freely about the subject for a few minutes before making an assignment for the next meeting of the class.

Another writer [2] says this about motives of work:

[1] KENDALL, C. N., and MIRICK, G. A.—*How to Teach the Fundamental Subjects.* Houghton, Mifflin, 1915, pp. 74–75.

[2] YOAKAM, G. A.—*Reading and Study.* Macmillan, 1928, p. 454.

Are the things which the child is asked to do worth while for him? Can he see that they will mean something to him today, tomorrow, and later in life? Is he firmly convinced that he is engaged in profitable work or is he merely going through the motions because he must?

Suggestions for improving conversation. Conversation and discussion demand interest, spontaneity, and enjoyment on the part of the child if it is to be genuine. Only vital subjects will induce reality in making a conversation interesting. The following suggestions [1] may help teacher and pupils to improve conversation:

1. Converse about what has been read in different fields: history, literature, science; current fiction and poetry; literature of special interest; topics of the day.
2. Know magazines which deal with specific subjects in an interesting way; know where to get current books and poetry.
3. Know how to use good stories, anecdotes, and illustrations and how to use references and magazines which contain good stories and joke pages.
4. Relate travel experiences.
5. Report to friends any interesting observations or experiences dealing with people and scientific facts, art, processes of construction, games, sports, fairs, a circus, plays, exhibits.
6. Quote sayings of interesting characters, descriptions of people and places, incidents and passages from history or literature.
7. Retell interesting portions of lectures and conversations.
8. Know how to raise certain questions with friends; know something of their interests and guide the conversation accordingly; obtain the participation of strangers by an attitude of friendliness and by introducing topics about which they may wish to talk.

Preparing for conversation and discussion. A conversation lesson is ordinarily a language exercise used chiefly for the purpose of improving the pupils in the art of com-

[1] *Fourth Yearbook.* Department of Superintendence, p. 243.

munication; but, obviously, conversation cannot be engaged in apart from some subject to converse about. The lack of an adequate subject has sometimes led to very artificial and unreal assignments. If a conversation is to be indulged in for the sake of the enjoyment alone, it is obvious that an assignment may or may not be necessary. In the primary grades where the teacher is to develop language expression among children who have little or no language ability, conversation is best when it is informal and arises out of some activity or interest of children. To say to children, "Now we are going to have a conversation lesson; find something to talk about" is a poor assignment. It is better to seize upon opportunities for spontaneous expression when they arise.

In the middle and upper grades pupils may take an interest in improving their powers of conversation and discussion. In that case, many possibilities for exercise of conversational ability are present in all school subjects but particularly in literature, history, geography and science. Sometimes an assignment may be made of a subject or topic; pupils may prepare for conversation by reading an investigation, or they may simply be instructed to organize what they already know for conversational purposes. At other times out-of-class work may deal with such matters as looking up correct pronunciations of words, practicing the grouping of ideas in sentences and paragraphs, and in other ways improving skill in expression of this sort.

Incidental practice in conversation is a by-product of many activities in school and out, but it can scarcely be said that the assignment in such cases is for conversation. It is rather that conversation is a valuable tool of communication which finds its use in all types of school subjects and situations.

An example of discussion in which an assignment is developed follows:

Why Farmers Are More Prosperous in Illinois than in Vermont

Teacher: Here are a number of photographic views which I took of farm homes in Illinois and Vermont several summers ago.

Student A: I have seen some pictures like these before. My uncle lives on a farm. He has cattle, hogs, chickens, and horses. I am going to visit him after school is out.

Student B: Some of these homes are nicer than others. There are more buildings in this picture than in that one, and there are more animals.

Student C: Perhaps some farmers have more money to do things with than others.

Teacher: In Illinois, farmers grow a great deal of corn to fatten cattle and hogs for market. They ship both corn and live stock to Chicago in exchange for money. Many carloads of grain and farm animals are sent to market each week. In Vermont, farmers do not sell many cattle and hogs, and they grow little corn. Farms in these two states vary considerably in size.

Student C: We drove out into the country one day, and I saw some farm animals and grain growing in the fields. Daddy said that farmers grew grain to feed cattle and hogs and other live stock.

Student A: My uncle sells chickens and eggs, and I think he sells hogs and cattle, too.

Student D: If I lived on a farm, I would grow big fields of grain and have lots of farm animals.

Student C: I would want a good farm if I lived in the country.

Student A: I believe I would sooner live on an Illinois farm than on a farm in Vermont.

Student B: I think I would, too.

Teacher: We shall have to find out why farm homes are better kept up in Illinois than in Vermont. If farmers in Illinois have more money to do things with than farmers in Vermont, we might find out the reason for

> this condition. We might find out something about the size of the farms in Illinois and Vermont. Then we might find out about the kind of crops grown; where they are sold; how much the farmers get for their crops, farm animals, etc. So, for our next lesson, we shall read pages —, — of our reference books (these should be specifically stated) and find out how large farms are in Illinois and in Vermont; how many bushels of grain are grown in each state; and how much money the farmers get for their grain. Then we shall be able to decide which state is really better for farming.

This assignment can be enlarged upon at each subsequent meeting of the class until children become fully aware of the reasons why farmers are likely to be more prosperous in Illinois than in Vermont. It is more or less obvious that a conversation of this type can be so directed by the teacher that children's interests and needs will become vital factors in getting the proper sort of orientation in the problem or project. An informal conversation aids the pupils to get the problem in mind, to get started upon its solution. It arouses an active interest in searching for information and in planning activities. It is also the typical mode of assignment in many school activities.

Profitable class activities. Since conversation as a teaching activity has been and is inextricably associated with all other types of activity, it may be difficult to conceive of it as a separate and distinct method of conducting a recitation; but when the major activity of the recitation consists predominantly of conversation the recitation may be labeled accordingly. Naturally, the question arises. "How is the activity to be initiated and kept going?"

Conversation may be initiated either by the teacher or by the pupils. In either case, it may begin with the telling

of a story, the statement of a problem, or the showing of a picture or a film. The manner of beginning will depend on the purpose guiding the conversation. Since conversation should function with the children as a means of relaxation, or an end in itself, the teacher may initiate pupil activity by relating some interesting experience which is more or less common to the group. Since, in this particular instance, the social value of conversation is to be emphasized, there need be no serious planning of activities. Children will be permitted to talk freely about such activities as they find or create in their play and miniature business transactions out of school. If the conversation is intended as a preparation for a definite activity of a work type, there will be need for serious planning on the part of both teacher and pupils. Usually, however, conversation of either the social or work type furnishes many "leads" to activities of a factual nature. This is well illustrated by the fourth-grade teacher[1] who continued the conversation recitation on the canary bird as follows:

> The next day in the language lesson period three pupils who had canary birds and three who had not were invited to take seats in the front of the room. The teacher joined the group and began the conversation by remarking that when she was a little girl, she had a yellow-and-white canary that sang very sweetly. The children took up the teacher's thought and talked very naturally for about five minutes with very little help or guidance. This conversation formed the basis of blackboard composition, worked out by the class in the same period, and this in turn was a model for a written paragraph at a later time.

It will be noted at once that this conversation on canary birds has not only social value but work value also in that it initiates further study of a purposeful character.

[1] KENDALL, C. N., and MIRICK, G. A.—*Op. cit.*, pp. 74–75.

The conversation, once begun, may take the form of modified dialogue. That is, only one pupil talks at a time. Others listen attentively so as to be able to pick up the conversation at an opportune time. There should be no formal way of "breaking in" on the one who is talking. Conversation must be informal and, while pupils must understand that they are not to interrupt the speaker, they should not be required to assume the listening attitude altogether. Some pupils will monopolize the entire period if guidance is not judiciously given by the teacher. Pupils should be made to see that conversation is a coöperative enterprise in which all are to take an active part.

In the preceding section, an example was given of conversation in preparation for a definite activity of a work type. The following example will illustrate the social conversation.

Teacher: Did any of you hear or read about the latest news?

Student A: Yes, I heard a man say that a circus was coming to town.
It will be here in two weeks, maybe.

Student B: I saw some pictures on a billboard advertising the circus. There were pictures of wild animals, clowns, horses, etc. It said the show would be here in June.

Student C: Will we get to go to the circus?

Teacher: Well, I do not know. We must first find out on what day the circus will be in town. If it comes on Saturday, probably your father or mother will take you. If it comes on a school day, we may arrange our work so that we can go. But we must first find out the exact date of the circus before we make any plans.

Student A: I went to see a circus one time. It was last year. I saw lions, tigers, elephants, and many animals. There were clowns who were painted up and they had clubs, umbrellas, and all kinds of funny things. One clown had a toy gun and pretended he was hunting rabbits.

Student D: I wonder where they get all the wild animals and nice horses. I heard Uncle John say that the owners of the circus bought them somewhere.

Student B: They get them shipped in from other countries. But they can get the horses here at home.

Student C: I went to a zoo one time and saw all kinds of wild animals. Maybe they get them from the zoo.

Teacher: No, circus owners do not get their wild animals from the zoo. They buy them in foreign countries, and, sometimes, they raise their own.

Student E: I wonder where circus performers sleep. I suppose they sleep in tents like we do when we go camping.

Student C: I heard Daddy say that they sleep on the train when they are moving from one town to another, and they finish sleeping during the next day while the working men put up the big tent for the next performance.

Student D: I saw them put a big tent up when Barnum-Bailey and Ringling Brothers Circus came to town. It was an interesting sight.

Student B: I would like to know how they make such a big tent.

Teacher: Well, it takes a great deal of material to make a tent as large as some of them are. We could find out about some of these interesting things of circus life if we read certain books and asked questions of those who know.

There is really no limit to the interest which children will take in such a conversation. Since this was to illustrate a conversation having purely social value, no special attempt was taken to direct the conversation so that leads to purposeful activities would be suggested. However, it is almost impossible to prevent such leads from being suggested.

There are pitfalls in this form of activity as in other forms. If the teacher is not actively alert, there will be frequent wanderings in children's conversation. They are likely to digress a great deal without a leader. It is com-

mon knowledge that some teachers do not seem to care what happens in the recitation so long as pupils are mentally alert and active. This is the wrong attitude to take, regardless of the objective of the conversation. One might see some justification for slight wandering in an informal talk, but as a rule pupils should be held to a definite contribution in the work type of conversation. There is the danger that habits of lazy thinking and rambling talk will result from unguided chattering.

Appraisal of results. The purpose for which conversation is used determines whether it should or should not be measured. If conversation is employed as a language exercise, that is, to detect errors in speech, a check should be made by close observation on the part of the teacher; or she may have others listen for language errors made by children in their conversations. If, on the other hand, the purpose of conversation is to enjoy a social period together, there is no need of checking on the ability of children to converse. In fact, this practice would defeat the purpose for which the activity was held. Effective measurement of children's conversational powers, if made at all, must be done with a check-list and observation or by means of stenographic reports or mechanical recording devices.

Desirable and undesirable outcomes. A good conversation or discussion draws on children's imagination, memory, and power to do reflective and creative thinking. It gives them opportunity for creative expression and the interchange of ideas. It may be delightfully informal and intimate and rich in the discovery of new ideas. It is a fundamental type of human activity worth while for its own sake. Discussion furnishes a setting for the development of right attitudes of work, habits of listening, expressing ideas, and overcoming the self-consciousness so often found among

children of the upper grades. In fact, it is the basis of the socialized method and indispensable to it. It results in improved habits of speech and thought. It must not be overlooked, however, that some undesirable outcomes may result from a poorly conducted conversation hour. There probably is no greater opportunity in any other type of lesson exercise for pupils to ramble and chatter about nothing than in a carelessly guided conversation. Lack of attention to correct forms of speech and to effective modes of expression, too, may cause little or no progress to be made in improving this phase of the art of communication.

Summary. Conversation is a form of activity in which pupils exchange informally their common experiences. Its function is twofold: from the teacher's point of view, it is a means of observing children's language habits and of suggesting leads to purposeful activities; from the pupils' point of view, it is either a means of recreation or a necessary activity in the discussion of more serious problems. Its value is primarily a social one. Its subject matter is to be found in the many interesting experiences which children obtain from their environment in and about the school and home. Sometimes, nature and realistic stories furnish the subjects for conversation; sometimes history, geography, science, etc., furnish the basis for serious discussion. The subject is a vital factor in getting and holding children's interests. There is nothing quite so stimulating to conversation as the experiences which children have in common in their play activities cultivated both in the school and the home. When properly developed, practice in conversation develops an effective tool for use in subsequent learning activities, such as language lessons, nature-study lessons, and other forms of language and composition work. Children learn when to talk and when not to talk. They learn to be

polite and mannerly, to be attentive listeners and observers as well as partakers of many forms of wholesome enjoyment. Through conversation and discussion children learn to become coöperative social beings.

STUDY QUESTIONS

1. To what type of learning activities does conversation belong?
2. Why might it be objectionable to limit conversation to the common experiences of a group of pupils?
3. What are two functions of conversation?
4. What might be the objection to using fables and fairy tales exclusively in children's conversations?
5. To what extent are conversation and discussion valuable means of developing different learning activities?
6. How might conversation be effectively initiated with a group of children?
7. What are several pitfalls which the teacher must guard against in conducting a conversation or discussion?
8. In what ways may conversation contribute to valuable social habits?
9. What are several realistic stories in which the communication of ideas is largely through conversation?

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CHAPTER XXI

Story Telling

Introduction. The art of story telling was handed down to historic peoples from the remote period of the past. Prehistoric records on the walls of the caves of the stone age testify to an already developed ability to relate stories. Folk tales, fables, myths, legends, and hero stories constitute an important part of the ancient narratives of the world. The universal use of the story today and the almost instinctive delight of children in a tale well told would seem to testify to the long use of stories among ancient peoples. In the form of fiction, motion and sound pictures, radio, and drama the story has widespread use today. It is a universal means of entertainment and recreation upon which schools have seized avidly as a relief from less natural and effective types or modes of communication. As with other forms of natural expression, the school has sometimes misused story telling and tried to make it a means toward an end rather than an end in itself. The good story is an end in itself; the activity of story telling justifies itself and needs no extrinsic motivation.

The use of story telling as a device. Educationally, listening to stories is a practical means of learning interesting things in interesting ways. The use of the story in reading and language, in history, biography, and in the natural sciences is almost universal. It is used as a means of arousing interest and enthusiasm in many of the abstract school subjects in which intrinsic interest is often lacking. The story needs no such justification. It can be justified for its

recreatory values alone, but often it has been thought of by teachers as a device for teaching facts or developing skills, a sort of royal vehicle for the painless dissemination of knowledge or information unpalatable for its own sake. This is a misuse of story telling. If a story points a moral, well and good; if it improves language habits, so much the better; but the story must, first of all, be a good story and story telling must be worth while for its own sake. It is an advantage for every teacher to learn well the art of story telling.

Story telling an art. Story telling is an art. It is narrative; that is, it tells what has happened, either in real life or in the imagination of the maker or the story teller. It is a story of real life, as in history; or it is a story of an imaginary life, as in fiction. In order to carry on the art successfully, the story teller either must understand and appreciate the stories of others well enough to reproduce them effectively, or he must exercise his creative imagination and make plots of his own, that is, construct an interesting plan for a story, as well as unfold this plot in a fashion which will create interest and suspense in the mind of the listener or reader. The ability to create original stories is a rare gift, but the ability to tell the stories of others effectively is more common and may be learned by anyone who wishes to teach.

Qualifications of the teacher. The qualifications necessary in order that the teacher may become a good story teller include ability to locate and select good stories, to understand and interpret them effectively, to memorize the story or to read it effectively, and to use skillfully her personality to enrich and give effectiveness to the tale. The story teller is, in a way, an actor. He interprets the words of the author through his facial expression, the use

of the tones of his voice, and his gestures. Effective dramatic reading is an art that must be learned. The teacher may well practice the art.

Two types of story telling. Story telling in the school is of two types: (1) that in which the teacher is the teller and the children are the audience; and (2) that in which the children are narrators and the teacher and fellow pupils are the audience. The teacher needs to teach the children all she knows about story telling and in addition to develop among them the true audience spirit, for all story tellers need audiences. If there were no audiences, there would be no story tellers.

Two major functions of story telling. Story telling is often employed by the teacher as a means of attaining certain desirable results in learning. By the pupils, it is used as an end in itself. As a device used in teaching, story telling is a valuable method of creating interest and enthusiasm in school work when properly used. As an end in itself, its chief purpose is to contribute enjoyment to a pleasant social hour. The pure joy of telling and listening is a strong motive for children to engage in story-telling experiences.

The story is used by the teacher for numerous purposes, among which may be mentioned checking habits of expression and deficiencies in the use of oral language, but these are merely subordinate purposes of the larger function of getting children to enjoy good stories and interesting experiences for their own sake. In the primary grades, the main function of the story is to give children practice in organizing a simple series of experiences and in relating them to a sympathetic audience. In the intermediate grades, in addition to its use as entertainment, it provides opportunities for the teacher to check on some deficiency in oral expression, to give a background of experience for

the study of certain school subjects, or to perfect the language skills involved in story telling. In all grades, story telling may be effectively employed to arouse interest in subsequent activities. It is highly desirable and valuable in initiating new assignments.

From the point of view of the children, story telling is simply an enjoyable experience worth while for its own sake. They learn by imitation to tell original stories and to be effective in telling the stories they hear and read. This practice has a social significance to children. They enjoy telling and listening to stories as a social pastime. They cultivate the art of story telling without being made too self-conscious of the technique involved.

True and imaginative stories. An investigation of the stories told to children in schools reveals the fact that they have been largely of the imaginary type, such as fairy tales, Mother Goose rhymes, fables, myths, and simple imaginative narratives. The supposition has long been that the imagination can be most effectively trained through the use of stories; but, while the importance of the fictitious story should not be underestimated, it need not be so exclusively employed that real stories find no place in the training of children's appreciation for the real things of life. The basis on which stories should be selected should be, most obviously, children's needs and interests. Some stories should be of the fantastic type; others of the realistic or natural type. Each has its advantages in rounding out children's experiences. Usually, make-believe stories find a preference with very young children, while stories of real life and adventure make their appeal to older children. However, older children and adults also enjoy folk tales and similar stories in which there is an element of mystery and the supernatural.

Guides to good stories. There is really no need, however, for the modern teacher to guess at what stories should be used in any particular grade of the school, since there is considerable evidence of an objective character to guide her in her selection of suitable materials for story telling. It is an interesting experience for the teacher of literature to compare the studies and investigations giving children's actual preferences for stories and reading materials with books containing stories and materials recommended by those who were inclined to take children's likes for granted. Such studies and investigations as are here indicated give an interesting and illuminating compilation of materials representing children's tastes in reading. At present, the most comprehensive studies and investigations are Jordan's *A Study of Children's Interests in Reading,* Terman and Lima's *Children's Readings,* Washburne and Vogel's *Winnetka Graded Book List,* Uhl's *The Materials of Reading,* and the reading lists of the American Library Association. While these studies and investigations are primarily concerned with children's reading tastes, yet they indicate the kind of story materials in which children have an unusual amount of interest. They suggest the importance of newer types of materials for children's stories.

Types of materials. It is somewhat difficult to make a satisfactory classification of story-telling materials, for there is considerable overlapping of the divisions of any classification which one may attempt to make. Usually, however, two types of materials are more or less obvious; namely, (1) the purely recreatory, and (2) the informational or work type. To this classification may be added those materials which are both recreatory and informational or factual. The recreatory type of materials include some stories in which the element of information is present.

Their chief purpose is to supply the learner with the facts about the world in which he lives, while providing him with entertainment at the same time. For purposes of illustrating these three types of materials, a sample classification of titles is suggested below.

Sample Titles of Stories Which Are Primarily Used for Recreatory Purposes[1]

1. Mother Goose Jingles and Nursery Rhymes
   a. Jack and Jill
   b. Three Blind Mice
   c. Higgledy, Piggledy
   d. Hey Diddle Diddle
   e. Taffy Was a Welshman
2. Traditional Fairy Stories
   a. The Old Woman and Her Pig
   b. Henny Penny
   c. Jack and the Bean Stalk
   d. Cinderella
   e. Drakestail
   f. The Tongue-Cut Sparrow
   g. The Straw Ox
3. Modern Fairy Tales
   a. The Emperor's New Clothes
   b. The Nightingale
   c. The Tinderbox
   d. The Ugly Duckling
   e. The Happy Prince
   f. The Knights of the Silver Shield
   g. Old Pipes and Dryad
   h. The King of the Golden River
4. Fables and Symbolic Stories
   a. Androcles and the Lion
   b. The Hare and the Tortoise
   c. The Fox and the Grapes
   d. The Dairywoman and the Pot of Milk

[1] Titles adapted from CURRY and CLIPPINGER—*Children's Literature*. Rand, McNally, 1920.

e. The Whistle
f. The Vision of Mirzah

5. Myths
   a. The Miraculous Pitcher
   b. The Narcissus
   c. Icarus and Dædulus
   d. Thor's Visit to Jotunheim
6. Narrative Poetry
   a. The Leak in the Dike
   b. The Swing
   c. The Raggedy Man
   d. Casabianca
   e. The Lay of the Last Minstrel
7. Romances and Legends
   a. Ali Baba and the Forty Thieves
   b. Don Quixote
   c. King Arthur and His Knights
   d. Aladdin and the Wonderful Lamp
   e. Sinbad the Sailor

Sample Titles of Stories and Factual Materials Which May Be Used for Both Recreatory and Informational Purposes

1. Realistic Stories
   a. The Big Bear
   b. Eyes and No Eyes
   c. The Good-Natured Little Boy
   d. Waste Not, Want Not
   e. Jackanapes
2. Nature Stories
   a. Johnny Chuck Finds the Best Things in the World
   b. Bird Habits
   c. Wild Life in the Farm-Yard
   d. Insect Life
   e. The Story of a Salmon
   f. Moti Guj—Mutineer
3. Biography and Hero Stories
   a. The Boyhood of Washington
   b. The Boy's Life of Mark Twain

   c. Franklin's Autobiography
   d. In the Western Wilderness
   e. Heroes of the Air
   f. The Wonder-Workers
4. Geography and Travel
   a. Working My Way around the World
   b. Kim
   c. The Call of the Wild
   d. Lorna Doone
   e. Peeps into Many Lands
   f. Peeps at Great Cities
   g. Wilderness
5. History
   a. The Last of the Mohicans
   b. The Story of Mankind
   c. A Tale of Two Cities
   d. From the Deep Woods to Civilization
   e. When Knights were Bold
   f. The Enchanted Past
   g. Plutarch's Lives
   h. The Oregon Trail
6. Sports and Amusements
   a. Shelters, Shacks, and Shanties
   b. Football without a Coach
   c. The Book of Magic
   d. Three Hundred Games and Pastimes

Sample Titles of Children's Books Which Are Primarily Used for Informational Purposes [1]

1. Occupations and Handicrafts
   a. Things Worth Doing and How to Do Them
   b. Practical Things with Simple Tools
   c. Hand-Made Toys for Girls and Boys
   d. Practical Basket-Making
   e. Boys' Book of Model Boats
2. Applied Science
   a. Pick, Shovel, and Pluck

[1] Adapted from GARDNER and RAMSEY—*A Handbook of Children's Literature*, Scott, Foresman, 1927.

   b. The Wonders of Chemistry
   c. Every Boy His Own Mechanic
   d. Automobiles
   e. Trains, Tracks, and Travel

3. Physiology and Hygiene
   a. The Daily Dozen
   b. Yourself and Your Body
   c. The Efficient Life
   d. Clothing and Health
   e. The Child's Day

4. Vocations and Industry
   a. The Worker and His Work
   b. The Story of Sugar
   c. Careers of Danger and Daring
   d. Under the Big Top
   e. How the World Is Housed
   f. How the World Is Clothed
   g. How the World Is Fed

5. Gardening
   a. Our Garden Flowers
   b. Garden Flowers of Spring
   c. The Beginner's Garden Book
   d. Garden Flowers of Autumn
   e. Garden Flowers of Summer

Any such classification of materials as is indicated above must necessarily be incomplete, for the reason that many textbooks contain the work type of material organized in story form. History, geography, general science, and other elementary school subjects of the content type are often written in story form in order to make interesting reading materials; consequently, it is difficult to classify them into well-defined divisions. For practical purposes, the classification given here will be found useful.

Interesting pupils in story telling. Stories are usually sufficiently interesting in themselves to obtain and hold

the attention of children. The elements of excitement and suspense are strong motives for reading and listening to stories. Good stories are generally full of action and rich in material for the imagination. They speak for themselves. Poor stories die of their own weakness. If the teacher is skilled in selecting good stories and knows the art of maintaining interest to the end by observing the fundamental principles of good story telling, children imitate the practice, learn the technique, and come to enjoy story telling. The content of the story also is an important matter in getting children's interest. Every word and sentence should be full of action. Activity is interesting to children. It is a part of their life. Appeal to curiosity and mystery are powerful influences in getting children's attention, although the presence of an element of mystery is not necessarily the chief criterion for the selection of a story. Adventure stories, animal stories, and plain simple tales of human experiences carry their own appeal to children. More use might well be made of stories of the latter type.

Familiarity with a few simple rules of selecting and telling stories will often prevent the story-telling period from "going flat" or from becoming a total failure. These principles are:

1. Select stories rich in detail.
2. Select stories full of action words and sentences.
3. Select a few highly imaginative stories.
4. Select stories from children's experiences.
5. Select animal, bird, insect, plant, and rock stories.
6. Select stories of adventure.
7. Make the story fit the occasion.
8. Understand children's limitations in comprehending stories.
9. Use simple, forceful language.
10. Tell the story straight through without stopping.
11. Employ direct style as much as possible.
12. Have the story end effectively.

Directing seat and home work activities. The nature of the assignment in story telling depends on whether it is to be chiefly a teacher's or pupils' enterprise or both. If the purpose of the recitation period is to give children literary experiences and, at the same time, to have them enjoy a social hour, the assignment may be omitted. If, on the other hand, children are to prepare stories for later telling, the assignment is necessary. In this instance, the teacher should have children help to plan the program of stories, select the stories to be told, and begin the preparation of stories. It frequently happens that children learn many of their stories without any previous preparation or assignment. They pick them up in the class after having heard them repeated by the teacher or other pupils, or they may learn them incidentally at home from the radio or phonograph, parent or other relative. In fact, this is the way children learn most of the universally known stories so familiar to all of us. Therefore, most often all that is needed in the way of assignment is merely the setting of an hour for story telling.

When stories are to be composed from children's experiences, the assignment will become a more serious matter. It becomes a time for purposing and planning, for composing and writing up experiences, and for evaluating and organizing them into coherent units. In this instance, the assignment becomes a coöperative enterprise between the teacher and pupils. This practice is valuable in developing creative ability. It should be encouraged much more than it is.

Conducting class activities. The nature of the organization of the recitation for story-telling activities depends largely upon the plan of work to be undertaken. If the recitation is to be used to create stories from children's expe-

riences or to practice learning them for social or other purposes, there will be no need for any special form of class organization other than that which is necessary for carrying on informal group work. If, on the other hand, the recitation is to be devoted to telling and to listening to stories already composed, the organization of the class should be such as to encourage the best conditions for speaking and listening. Many teachers favor the plan used by the early Hebrew teachers in telling the parables and legends of the *Mishna* to their children. The effect of having children grouped in a semicircle about the teacher or person interested in telling the story tends to increase their interest and enthusiasm for the story-telling activity.

When the recitation activity becomes a period of creative endeavor, children engage individually in selecting and organizing their experiences into simple stories. This practice has many values for children. They learn to compose, to write, to evaluate, to organize, to spell, to pronounce, to articulate, and to do skillfully a host of other specific activities essential in learning. Usually, however, the recitation is employed for purposes of training children in the art of telling stories rather than in composition. Its function, in this respect, is chiefly to provide sufficient practice for children to learn how to tell and listen effectively. In no other way can children economically learn the technique involved in story telling than through constant practice under careful guidance of the teacher. Good models, examples, illustrations, and demonstrations are very essential, for children learn much of the technique of story telling through observation and imitation, as well as through practice. In order that they may have the most favorable conditions for learning good stories and for telling them effectively, the teacher should have at her command a few

guiding principles in the art of story telling. A number of these were indicated in a previous section.

The test of effective story telling. Since the main function of story telling is to entertain, any attempt to measure success by administering a test would defeat the purpose of the activity. The telling of a story is a test in itself. The reaction of the listeners will serve as a measure of success. If an interesting story is well told, it will please the audience and a comparative evaluation of it may be made on this basis. In the final analysis, the teacher is usually the judge of the success which children attain in telling stories. If, however, story telling involves, in addition to the telling feature, composing stories from children's experiences, the appropriate test is a written or oral story. Usually a check-list, such as the following, will make pupils conscious of the factors which are essential in good story telling.

A Student's Check-List for Judging an Oral Story

Directions. Draw a circle around "YES" if the pupil telling the story was clear on a certain point, or draw a circle around "NO" if he was not clear.

1. Did the pupil mention the title of the story?.....	YES	NO
2. Did he tell the story to entertain you?...........	YES	NO
3. Did you enjoy it?...........................	YES	NO
4. Did he tell the story to give you information about some object, person, or thing?.................	YES	NO
5. Did you understand the story?................	YES	NO
6. Could you act out anything that was said?......	YES	NO
7. Could you make pictures of what was said?......	YES	NO
8. Did you appreciate the story?.................	YES	NO
9. Was it about animals?.......................	YES	NO
10. Was it about adventure?......................	YES	NO
11. Was the story suitable or appropriate for the occasion?..................................	YES	NO
12. Did you ever hear the story before?............	YES	NO

13. Was the story taken from a book? .... YES NO
14. Was it made up from the pupil's own experiences? YES NO
15. Could you tell whether he omitted any part of the story? .... YES NO
16. Was the story very interesting to you? .... YES NO
17. Was it funny? .... YES NO
18. Was the pupil enthusiastic about telling the story? YES NO
19. Was he in a hurry to get through with the story?. YES NO
20. Did he make any mistakes in pronouncing words? YES NO
21. Did he make any mistakes in using words? .... YES NO
22. Did he use many "ands"? .... YES NO
23. Could you write out what the story was about?... YES NO
24. Could you get up before the class and tell the story as you heard it told? .... YES NO
25. Did you like the way the story was told? .... YES NO
26. Would you like to hear another story just like the one you heard? .... YES NO
27. Did the story teach a lesson? .... YES NO

Educational outcomes. A good story well told makes a strong appeal to children's interest. A teacher who has developed considerable ability in telling stories can do much toward vitalizing school work for children. Experiences in listening to and telling stories should develop among children the spirit of coöperation and other qualities so necessary in socialized living. Good story telling should result in the development of desirable language habits among children. Stories should linger with children after they leave school. A few of the world's most highly prized stories should be familiar to all. The common possession of such a literary heritage tends to strengthen the ties among the members of the human race.

Summary. Story telling is one of the oldest forms of oral communication. In its original form, story telling is narrative discourse, containing elements of excitement, mystery, curiosity, adventure, action, and other attention-

getting qualities. In the more modern sense, story telling is a form of discourse in which practical and real experiences of a highly imaginative type are had, as well as one in which the make-believe type of experiences is made possible. Its chief function is to give pleasure, to motivate activities, and to encourage children to relate their experiences in an entertaining manner. However, it may be employed for purposes of initiating creative endeavor among children, as in writing and telling stories from their own experiences. Biography, history, literature, and, in fact, all subjects in which incidents, events, happenings, and people are to be found make valuable sources of materials for stories. Make-believe stories have a place in story telling, but they should not be employed so exclusively that real, everyday stories do not find a place in children's experiences. Real stories, adventure stories, animal stories, and simple stories from children's own experiences are often as full of action and excitement as most mythical stories of the highly imaginative type. In selecting real stories, teachers must make certain that they are, first of all, highly interesting. Usually, it is just as easy, or difficult, to assign one type of a story as another. Stories full of action are valuable in initiating study or recreatory reading activity among children. This is an important consideration to keep in mind in making assignments in the story-telling period. Practice in telling stories must employ good models, good illustrations, and demonstrations of interesting stories. Children are, in fact, little mimics. They observe, imitate, and practice doing the things after the manner of others. Audience situations must be provided, and plenty of opportunity must be given to children to tell freely the stories which they especially like. Children's technique of story telling is largely determined by the technique which the teacher employs in telling her own

stories. Nevertheless, they can and should develop some judgment as to what are and are not good stories and what is good story telling. Often a check-list placed in the hands of pupils will be effective in setting good standards for story telling.

STUDY QUESTIONS

1. What are the characteristics of good stories?
2. What are the abilities required to tell stories effectively?
3. What other functions may story telling serve, other than that of initiating assignments?
4. What are several subjects in which materials for interesting stories may be found?
5. What are the advantages to children in choosing materials for stories from their experiences?
6. What are the objections to the exclusive use of make-believe stories?
7. What are the advantages of using real stories instead of unreal ones?
8. What are several real stories which children may learn for purposes of entertainment?
9. What is meant by the informational type of story?
10. What are several informational or work type stories?
11. What are the elements in a story which tend to create suspense?
12. How may suspense be maintained in telling stories to children?
13. How may creative endeavor be encouraged by story telling?
14. What is the value of an audience situation in telling stories?
15. How may children be trained to be effective listeners?
16. How would you attempt to measure the success of effective story telling?

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CHAPTER XXII

Dramatization

Introduction. Dramatization has for a long time been one of the natural and spontaneous activities of the school. Teachers have commonly employed it to lighten an otherwise dreary day. Dramatic action appeals to children because of their tendency to imitation and mimicry. Schools have often misused dramatization in order to attain indirectly some end which could not easily be achieved by other means. Subjects and events which lend themselves poorly to dramatization have often been approached from the dramatic point of view when they had better have been approached from another angle. But in spite of this misuse of dramatization, it has on the whole been rather better done than many other of the school activities.

The nature of dramatization. Dramatization is depicting through bodily action, the characters, movements, and activities of a story or play. It proceeds through the use of language accompanied by facial expression, gesture, and movement or action. It attempts to tell the story in a more vivid manner than by word alone and to enrich the appeal of the play through the addition of the pictorial element found in the movement of speaking characters across the stage. The action is further supported by the setting. All these elements add to the reality of the story and increase its appeal to the emotions and to the appreciation of the beautiful. Dramatization approaches more nearly the reality of life than the cold characters of the printed page. Because of its concrete appeal to the sense of sight, particularly,

as well as to the sense of hearing, and because of the bodily action involved, dramatization makes a particular appeal to children. It is a concrete form of play which they can understand and into which they can launch with whole-hearted joy when it is properly organized and carried through.

When dramatization goes on without words it becomes pantomime. Plays without words, too, appeal strongly to children. Their natural love for mimicry and their tendency to manipulate things and to try to express through bodily action ideas and feelings, make pantomime especially appropriate for them. The recent interest in puppet plays revives an old form of dramatization which is much loved by children, young and old.

Dramatization intrinsically valuable. Dramatization as a school activity has been one of the few concessions made by the authoritarian adult group to the natural interests of children. Often teachers have used it as if it were merely a method or device for teaching something else. This is a mistake. Dramatization is worth while for its own sake. If through it certain educational values are achieved in the way of training in language expression and in physical grace and skill, these by-products are gifts of the gods and should come as an overflow from the measure of good which is inherent in dramatization itself.

Probably the greatest value of dramatization to pupils is derived from the opportunity which it gives for them to clarify thought through their attempts to reproduce the action of a story, to derive the meaning of words from action, and to enjoy the emotional release which it offers through both forms of expression. To feel a beautiful emotion and to attempt to express it through words and action is a type of vivid experience of which children have probably had all too little in the schools of the past.

Forms of dramatic activity. In schools dramatization takes on many forms, ranging from the simple attempts of the primary or kindergarten tot to depict the action of *The Three Bears* to the rather underdone attempts of the graduating class to "put on" *A Midsummer Night's Dream.* Among the different forms of dramatic activities which are common in the schools are the following:

1. Pageants
2. Plays
3. Pantomimes
4. Operettas
5. Parties
6. Celebrations
7. Campaigns
8. Exhibitions
9. Crusades
10. Fairs
11. Bazaars
12. Contests
13. Entertainments
14. Programs
15. Festivals
16. Debates

A suggestive list of dramatic activities. *The Twentieth Yearbook, Part I,* of the National Society for the Study of Education is especially rich in suggestive dramatic activities for teachers. Activities such as the following are commonly found in the programs of schools on visiting day and at other times. The only danger in the use of such activities is that the teacher may over-formalize them and do most of the thinking about them herself. The best dramatizations are those planned and carried out by the children.

Twentieth-Yearbook List of Dramatic Activities

1. An Arbor Day Pageant
2. A Musical Contest
3. A Robert Louis Stevenson Program
4. A Pantomime of a Fairy Scene from *A Midsummer Night's Dream*
5. A Better-Speech Crusade
6. A Health Play
7. A Stay-in-School Campaign

8. A Hallowe'en Party
9. A School Fair
10. A Dramatization of the Courtship of Miles Standish
11. A Debate: *Resolved,* that Achilles Was Braver than Hector
12. An Operetta: Fairy Flowers
13. A Japanese Festival
14. An Indian Entertainment
15. A Columbus Day Program
16. A Zone Exhibit
17. A Kite Tournament
18. A Valentine Party
19. An Oriental Bazaar
20. An Egg Hunt
21. A Doll Sale

A glance over this list will give one an idea of the possibilities of making use of dramatic expression in teaching. The list of activities is by no means complete; others could be added and the list extended considerably.

Educational uses of dramatization. Dramatization should be employed for its value as an activity appropriate for children. It may be used by the teacher as a means to arouse interest in literature and history, as in acting out the parts of famous characters in order to understand an important historical event, but this use of dramatization must always be subordinate to the value of the experience itself. Dramatization is best when employed as a means for obtaining enriched experiences from literature, biography, history, and other school subjects in which the material can be readily adapted to such practice. In any case, it should be interesting for itself alone; otherwise it becomes an artificial and unreal thing. It is a means of enjoying many things which children cannot have the pleasure of enjoying through direct experience with objects, persons, and events. It may afford opportunity for achieving the useful purpose of making concrete and vivid through bodily ex-

pression the more abstract phases of school work. That it cannot be successfully employed as a device for diagnosing language errors or drilling on language forms is more or less obvious to the observant teacher. The procedure is too general in character and the work spirit is too foreign to the dramatic activity for the latter to be used for such purposes. Diagnosis requires a specific technique of its own. It is, however, perfectly legitimate to seek to develop through dramatization more adequate use of language and more effective types of expression. Such a purpose, however, is first of all the teacher's purpose. Special emphasis on artificial types of pronunciation, articulation, and gesture is undesirable. Nor is the use of dramatization merely for the opportunities afforded for exercises in enunciation, pronunciation, gesture, etc., a valid procedure. It must be remembered that the most important function of dramatization is to give children experiences in interpreting the thoughts of others through the use of voice and bodily expression, and thus to enable them to understand more adequately and to feel more deeply the great stories of the world as well as to create and play new stories of their own.

Subjects appropriate for dramatic activities. The subject matter and materials suitable for dramatization purposes are extensive. Literature and history are the most common sources for materials. These subjects may be considered the pioneer sources of materials for this activity, but current events, hygiene, and many other subjects of the content type offer some opportunities for dramatization, particularly in the form of pageants. Stories from history and literature are most readily adapted to stage activities. The practice of adapting a story in non-dramatic form to dramatization involves considerable composition and this is a valuable sort of training for children in English. It also

stimulates the imagination of children, encourages inventiveness, and appeals to the creative urge. Many schools are also making much use of original plays by children, and encourage them to make their own stage settings and plan their own presentations. The value of such practice cannot be overestimated, for it furnishes excellent motives for many other meaningful activities such as reading, composition, writing, spelling, pronunciation, articulation, and numerous other activities of a similar character. A glance through the list [1] of school activities indicated below will give one an idea of the extensiveness of subject matter for dramatization purposes. The reader may readily determine, at a glance, what school subjects furnish the materials for the various activities. As an exercise, the student may write in the blank at the right of each title the subject or subjects which furnish the material for that particular activity.

Titles of Activities	Subjects
1. A Mother Goose Party	________
2. A Visit to the Grocery Store	________
3. Arabic Life	________
4. An Indian Entertainment	________
5. A Celebration of Columbus Day	________
6. A Health Crusade	________
7. A Home Garden Fair	________
8. A Zone Exhibit	________
9. An Oriental Bazaar	________
10. An Operetta	________
11. A Products Contest	________
12. A Japanese Festival	________
13. An Arbor Day Pageant	________
14. A Speakwell Club	________
15. A Cleanliness Campaign	________
16. A Better-Speech Crusade	________

[1] See *Twentieth Yearbook* of the National Society for the Study of Education, Part I, pp. 1–178.

Titles of Activities—*Continued*	Subjects—*Continued*
17. A School Service Club	
18. Forming a Mercantile Company	
19. Furnishing an Apartment	
20. A Travel Club	

This list contains the titles given to descriptions of projects scattered throughout the *Twentieth Yearbook,* Part I.

Interest in dramatic activities. Dramatization needs no extrinsic motivation, for it is a natural form of expression which appeals to children for its own sake. It is not merely a device for creating an interest in things which have no intrinsic value in themselves. The essential thing is that when dramatization is attempted the subject be in itself dramatic and that children have the opportunity to express their ideas in dramatic form. The common use of dramatization as a means of teaching a lesson in hygiene, thrift, or some other subject is often bad because neither the teacher nor the pupils feel that the subject is inherently dramatic. Dramatization is first of all an activity. Practice in the collection and organization of information, reading, writing, composition, planning, constructing, etc., may take place as incidental or concomitant learning; but "the play's the thing," in any case.

Dramatization activities give an opportunity for the child to exercise his natural gift for mimicry and his interest in bodily action, to follow his interest in a story, and to give expression to his emotions. He is further pleased by the opportunity to obtain approval of his audience and to outdo his fellow pupils. He is also pleased because of the greater understanding of the meaning of the play which arises from his attempts to interpret it. Incidentally, he gets pleasure from creative activities involved in writing, arranging, building, etc., which accompany the original dramatic ac-

tivities that are now becoming so common even in the early grades of the elementary school.

Directing the assignment. The three types of dramatization which may be employed in the elementary school are: (1) dramatization activities adapted from stories or books, (2) those created by children from life, and (3) those which are already composed in dramatic form by others. These different types require, in some respects, similar assignment activities from the teacher. Her part is to stimulate, guide, and direct. A partial analysis of the assignment activities which characterize these three different types of dramatization is made below for study.

1. Dramatization activities adapted from books
   a. Selecting the parts of the particular story to be used
   b. Adapting them for practical classroom purposes
   c. Learning the parts of the activity as assigned
   d. Rehearsing the material in preparation for presentation
   e. Revamping and revising the parts for final learning
   f. Rehearsing again for final presentation
2. Dramatization activities created from unorganized materials
   a. Finding the activity to be dramatized
   b. Developing a plot
   c. Selecting and organizing materials
   d. Writing the speeches
   e. Correcting and revising them
   f. Learning the parts of the dramatization activity
   g. Rehearsing them
3. Dramatization activities already written
   a. Selecting the parts to be learned
   b. Learning them
   c. Rehearsing the parts

In addition to these activities, there are a number of others which constitute a part or all of the assignment at times. Among these may be mentioned setting the stage,

preparing the scenery, making or obtaining costumes, organizing the details of the show, and other similar assignments. Much of this work is, of course, taken up in the recitation proper and discussed in detail before the assignment is made. How much may advantageously be done in class and how much out of class depends in a large measure upon children's needs and abilities. This matter calls for a great deal of consideration of the aptitudes of each individual member of the class. Some children demand assignments to develop and perfect those abilities in which they are deficient, while other children require a different type of an assignment to develop additional abilities that they have never attempted to use. In fact, there is no other procedure which offers greater opportunities for differentiated assignments than dramatization.

Class activities. The very nature of dramatization makes the class period largely a working and planning period. Little can be done in the way of outside preparation except the learning of parts and the collection and organization of materials once the play is actually started. Most commonly, then, the recitation consists of planning and organizing, selecting material, composing, constructing, and actually practicing the dialogue and the action of the play.

In creative dramatic activities a large amount of discussion, planning, and organizing is necessary. Pupils and teacher must select the story for dramatization, plan the dialogue and the action, select the characters, and plan the scenes, the stage settings, etc. This type of work is coöperative and requires that children and teacher work together in a group. After this planning is under way individual assignments to certain types of work may be given. One child may be asked to collect pictures from which

ideas may be gained for stage settings, another may look up costumes, a third may study other plays to get ideas for action and dialogue. All sorts of things may be undertaken by individual children at the suggestion of the teacher.

Often the recitation will consist of the coöperative writing of the dialogue of the play with the teacher giving suggestions and helping individual students with their work. Rewriting and revision of parts may constitute the work for the day. Then, finally, comes the actual rehearsal. Pupils and teacher work together on the problems of expression inherent in the activity and carry the work forward to completion.

Less pretentious dramatic activities which consist of merely reproducing a play already written by someone else, of course, may require far less time and far less work in and out of class. A play may be read by the class and acted out in an informal way within the confines of an ordinary class period. In such a case no home assignment is either necessary or desirable. Such little plays have for a long time been common in the school and have their value as preparation for original play making by the children themselves. They also offer opportunities for the teacher to train the pupils in better forms of expression and to improve their voices, gestures, and action. Many a recitation may well be taken up with the reproduction of a simple play.

Pantomimes, pageants, and other forms of dramatic activities offer, as do original plays, a large opportunity for coöperative purposing, planning, organizing, and constructing. The selection of material, the planning of the sequence of scenes, the making of costumes, etc., give children an opportunity for creative activity which they so much enjoy. The teacher's task is to guide and direct and to get

as much in the way of original work from children as possible; for the great value of this type of activity is in the amount of thinking and planning that children have to do in carrying it out to completion. Pantomimes and pageants appeal particularly to children, too, because of their inherent simplicity and the opportunities offered by them for original thinking and planning.

Activities involved in a school pageant. An example will illustrate in a concrete manner the nature of the activities engaged in by children when working out a school pageant.[1]

A Pageant of Spring

Step I. Class discussion of all types of entertainments that might prove satisfactory. All agreed finally upon a pageant having a "Spring motif."

Step II. Children and teacher brought in for examination and criticism many plays, pageants, and books dealing with festivals and festival making. Among them was "A Flower Wedding." "Flower Wedding" was chosen for their play.

Step III. Discussion of plots based upon stories and plays read. A plot was adopted. A little girl is overcome with sleep in the garden, and dreams she overhears the gossip among the wall flowers concerning a wedding they have just witnessed.

Step IV. Class discussion of flowers and shrubs that could be used as characters. This involved a trip to the woods and the identification of many common wild flowers. The following were selected:

Time: four o'clock; *Place,* Steeple Bush Church; *Bells,* Blue Bells; *Minister,* Jack-in-the-pulpit; *License Clerk,* Solomon's Seal.

The wedding: Bride, gowned in lily white; *Groom,* Sweet William; *Train Bearer,* Baby Blue Eyes; *Matron of Honor,* Orchid; *Bride's Maids,* Pinks; *Mother,* Lavender.

[1] Reported by Clara A. Dobbin to the committee on the preparation of new materials of instruction of the National Society for the Study of Education, *Twentieth Yearbook,* Part I, pp. 125–27.

Guests: Miss Daisy, Miss Phlox, Miss Ragged Robins, Miss Maréchal Niel, Miss Rose La France, Miss Blue-Eyed Mary, Master Johnny Jump-Up, Miss Violet, Miss Black-Eyed Susan, and Master Bleeding Heart.

Refreshments: Partridge (Berry); *Flavors,* Mint and Sage; Butter and Eggs; Sweet Peas, Snow Balls, Cherry Wine; *Waitress,* Bouncing Bet.

Gifts: Lady Slippers, Pitcher (Plant), Butter Cups, Arrow Head, Flags.

Step V. Class divided into committees, each responsible for the following items:

a. *Staging.* Worked out in the manual training department; involved preparing drawings to scale to report to class before actual construction could begin. Many changes were worked out in original plans after such discussions.

b. *Composing the dialogue* for the various characters. Many lessons in English were involved. Competitive prize was offered for the best verses submitted for use in the play. Several good ones were accepted.

c. *Costuming the characters.* Involved study of the flowers, making drawings to show design and coloring to the class before actual work on the material was undertaken. Many of the parents came to school daily to aid the girls in their actual work of seaming, stitching, and the like.

d. *Songs to be used in the play.* Many were presented; class made selections. These were taught under the direction of the instructor of music.

e. *Program-making.* Folders bearing original or copied designs were submitted for class criticism. This led to adoption of some, rejection of others. Every child in the school wrote two (no printing presses were available), and these were tied in the folder for distribution to the patrons.

f. Booklet made by those children having cameras. These children took pictures of the stage, of the characters and of some striking scenes, arranged them in an attractive manner, and presented the booklet to the school.

The above example illustrates remarkably well a kind of creative work which finds an outlet in dramatization.

ROYAPETTAH,

The opportunities for individual assignments and group activities, both in and out of the recitation, are abundant.

Measuring results. The success of a dramatization is determined by the reaction of the listeners. It is the effect which rendering a play, pantomime, pageant, or other similar activity leaves with the audience that counts. This effect is measured by the amount of applause or by the call for a second rendition of a play. The teacher may judge the success of dramatization by the extent to which it has initiated other activities or has suggested leads to further study. Testing in the usual sense of the word is then not necessary. Since dramatization is engaged in primarily for its own sake, there is little or no value to be obtained by using a measuring instrument in the form of a written test. However, a check-list, such as the following, may be used advantageously by the student to measure how well he is succeeding in mastering his part of the dramatization activity.

A Student's Check-List for Judging the Preparation of a Dramatization Activity

Directions: Encircle "YES" if you observed any of the following conditions in the preparation of a dramatization activity; or "NO" if you did not observe them.

1. Did the dramatization activity originate out of class discussions?	YES	NO
2. Was it adapted from a story or a book?	YES	NO
3. Was it a creative product of the class?	YES	NO
4. Did it fulfill a personal need?	YES	NO
5. Were you a partner in selecting the dramatization activity?	YES	NO
6. Were you enthusiastic about it?	YES	NO
7. Did you help to compose the different parts of the dramatization activity?	YES	NO
8. Did you write any of the speeches?	YES	NO

9. Was friendly class criticism given in composing and revising the different speeches?.................. YES NO
10. Were class discussions helpful in revamping speeches?.................................. YES NO
11. Did the teacher select the different characters?.... YES NO
12. Did all members of the class have an opportunity to participate?............................ YES NO
13. Did you have a leading part?................. YES NO
14. Were you assigned your part of the dramatization activity by the teacher?....................... YES NO
15. Were the characters well adapted to their parts?.. YES NO
16. Were you disappointed with your part?.......... YES NO
17. Were helpful suggestions made in learning your part?.. YES NO
18. Did you have to rewrite yours?................ YES NO
19. Was your part of the dramatization activity easy to learn?...................................... YES NO
20. Did it take several days to learn your part?...... YES NO
21. Did you learn your speech by mere repetition?... YES NO
22. Did you recite it orally to yourself or to someone else before taking part in the rehearsals?......... YES NO
23. Did you participate regularly in rehearsals?...... YES NO
24. Were the rehearsals helpful in learning your part? YES NO
25. Were you interested in doing your part well?..... YES NO
26. Did the characters seem to be well pleased with their parts?................................ YES NO
27. Did some of the characters act out their parts better than others?........................... YES NO
28. Would you like to participate in another similar activity?................................... YES NO
29. Did you think the audience enjoyed your efforts to present an interesting dramatization activity?.... YES NO
30. Did you learn many other things besides acting?.. YES NO

Outcomes. As was stated in the preceding section, dramatization has two important functions to perform: (1) that of developing expression, and (2) that of providing entertainment. It is sometimes used to check on children's

oral language habits, but, if employed for this purpose, it should be regarded as an incidental activity, for this is not the main purpose of dramatization. Dramatization is too general in nature to be an effective diagnostic instrument. There are other procedures which can be employed more effectively for such a purpose. Dramatization is a valuable means of developing appreciation. It also furnishes a release for the emotions. These are more or less the natural accompaniment of motor and intellectual activities engaged in by children in dramatizing an event full of action. As a classroom procedure, dramatization should aim to serve the useful purpose of furnishing an opportunity for expression. In initiating leads to many other activities, it provides for a wide range of interests among children. They have their wants richly satisfied. No other motivation is necessary when dramatization is carefully and earnestly employed. Dramatization affords an abundance of opportunities for bodily expression in which children's instinctive tendency to action finds a desirable and enjoyable outlet.

Summary. Dramatization is a natural type of human activity useful for its own sake. Teachers often use it as a means to vitalize children's activities when enthusiasm for the more formal subjects of the curriculum begins to wane; but this is not the real function of dramatization. There is probably no other classroom procedure which gives children as much enjoyment as acting out their own experiences or the experiences of others. Dramatization is rich in furnishing opportunities for varied activities. Sensorimotor, perceptual, physical, and emotional experiences can be provided for through dramatization activities. Besides, it provides an abundance of related activities through writing, constructing, etc., involved in creative work. In this respect, dramatization becomes one of the richest forms

of school activities in which children may be engaged. It is a creative endeavor and tends to develop initiative and leadership among children. The recitation procedure in dramatization varies according to the type of dramatization employed. In composing their own plays and pageants, children will be engaged in organizing, writing, selecting, evaluating, and in numerous other specific activities before they are ready to learn their speeches and rehearse them. They will have to read, study, observe, listen, recite, memorize, pronounce, spell, enunciate, and, in fact, perform a host of specific acts before they can render their dramatization. Likewise, in adapting plays from stories and books, children are required to perform many similar activities. Action is potent in learning. It stimulates learning because children love to perform, to entertain, to be entertained, to become enthusiastic, and to live in action. Many of their desires are satisfied in well-organized forms of dramatization.

STUDY QUESTIONS

1. Why is dramatization especially well adapted to the use of children?

2. What other types of learning than motor expression are usually involved in dramatization?

3. What are the characteristic features of the following forms of dramatization?

a. Pantomimes	f. Carnivals
b. Plays	g. Bazaars
c. Pageants	h. Celebrations
d. School Fairs	i. Crusades
e. Operettas	j. Campaigns

4. How may dramatization activities serve as leads to other activities?

5. What may be the objection to using dramatization for diagnostic and remedial purposes?

6. What are two important functions of dramatization?

7. What stories or materials may children organize into dramatization activities?
8. What are the steps involved in composing a play or pantomime from the subject: *Keeping the Body Healthy?*
9. What are several sources of materials for dramatization purposes?
10. How may dramatization be employed to motivate school work?
11. How may differentiated assignments be provided for in dramatization?
12. What is the most useful type of dramatization?
13. What are several distinctions to be observed between class-work and individual work in dramatization?
14. What activities may be most satisfactorily engaged in during the recitation?
15. What is the value of a student's check-list in preparing the dramatization?
16. How is success in dramatization to be measured?

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CHAPTER XXIII

Reporting and Recitation

Introduction. Reporting is not a new school activity but its use has recently become more common, and in many places it is replacing to a large extent the older recitation in which the child merely repeated what he had learned from the textbook. In making a report the pupil attempts to contribute new knowledge to his class group rather than merely to tell them what they already know. To prepare a report requires that the pupil read, organize, plan, and deliver the information which he has gained from investigation and study in an effective manner. Such a report is followed by socialized discussion rather than by a test, either oral or written, as was the custom for so many years. A written test may tell much more readily whether pupils have "studied their lesson" than a prolonged oral recitation. Mere recitation tends, too, to memorization of half-understood words rather than to real understanding. Nevertheless, it would be erroneous to say that recitation does not at times have its uses. Both types of activity will be discussed in this chapter in such a manner as to show how recitations may be improved by pupil activity in the form of reports and discussions.

Definitions of terms. A report is a connected discussion of a topic generally more or less extended in character. A recitation is technically a reproduction of the ideas presented in a textbook or reference book or both. There may seem at first to be little difference; for to a child a report may merely be a rather faithful recitation of what he has

read in some supplementary or reference book. That depends on the assignment made for the report. Generally a report includes data from several references; a recitation may be thought of as including the material from a textbook. This is the traditional meaning of the term, although it may be properly modified to include reporting and other forms of more original expression. The report implies an original organization of material; the recitation implies faithful reproduction of what has been read in a textbook or reference book. A report, therefore, requires greater originality, more extensive reading, planning, and organizing, and a freer use of original expression than the recitation as such. It is more in keeping with the idea that learning should be active and creative than the typical recitation of the past. For all practical purposes, however, the report might be regarded as a new form of recitation.

Principles for preparing a report. A list of guiding principles [1] for the preparation of a report reveals the creative nature of such an activity in the modern school:

1. In order to make a good report you should make a careful outline.
2. Decide on how you are going to open your report and set down a few suggestive sentences. Call this the "introduction."
3. Now decide on the body of your report. In your mind, arrange the points you wish to emphasize in order of their importance, leaving the most important point to the last. Make an outline for the body of your report from these materials, listing under each main point the main facts found in each reference and the illustrations that you want to use.
4. Decide now upon how you will end your report and outline briefly the ending, which is generally made up of the conclusions you have drawn from your materials.

[1] YOAKAM, G. A.—*Reading and Study*. Macmillan, 1928, p. 156.

5. When you have written your report, read it over several times to fix the main ideas in mind and to see whether or not you have said what you want to say.

It is obvious that such a list of principles implies that the report is far different from the traditional recitation, with its repetition of the textual material with little thought and often with great fidelity to the language of the text. Modern recitation, when used, requires a far freer and more original type of response.

New functions of the recitation. The function of the older recitation was largely that of assuring the teacher that the pupil had learned the lesson. It was a period for testing rather than a period of socialized discussion and thinking. The changed form of the recitation includes reporting, discussion, planning, organizing, constructing, working, testing, and other activities.

Reports and reporting. Reporting has to do primarily with the gathering and imparting of information. The report is factual. Dramatization, story telling, and conversation deal more generally with the recreational aspects of the recitation; reporting with the work aspects. Reporting is appropriate when accurate information necessary to the solution of a problem or the better understanding of a subject is essential. But reporting is more than that; it is a form of activity calculated to develop originality, initiative, and improved expression among pupils. Its function is then twofold: (1) to serve as a means of collecting and disseminating information otherwise unlikely to be known; and (2) to train the reporter in the gathering and dissemination of information. In many schools, reports and discussions by pupils now take the place of the question and answer type of recitation.

From the pupil's point of view, the object of a report

may be to inform, to entertain, or to convince and persuade others; or he may use the report to improve the organization of his material, or to improve his ability to think effectively on his feet. The latter function of the report is more appropriate for children of the upper grades; but even very young children may be encouraged to understand the value of reporting facts and experiences in a coherent manner to other children of the class.

Where and what to report. Topics for reports may be found in almost any content subject, but certain school subjects lend themselves to this type of work more readily than others. Topics of the informational type may be found in geography, history, nature study, biography, science, and other subjects where interesting reading materials abound. Topics in literature are especially suitable for the lower grades. Children on this level may report on the events of a game, a trip, or on an accident with a greater degree of fluency and ease than they can describe or explain in a logical order the appearance of a certain kind of automobile; but reports of a factual nature should not be neglected even among very small children. A very good classification of sources of vital topics for reports is given by Parker.[1] They are suggested here for study.

1. Topics of general public interest, such as tariff reform
2. Topics from vocational interests, plans, and activities
3. Topics from leisure activities, such as athletic contests, vacation trips, etc.
4. Topics from subjects other than English
5. Topics from special subjects

These topics have special reference to the activities of the high school, but a careful observation of the curriculum

[1] PARKER, S. C.—*Methods of Teaching High School Subjects.* Ginn, 1915, pp. 274–76.

of the elementary school will show that it is also rich in vital topics for reports. An excellent series of topics suitable for reports is also to be found in the *Fourth Yearbook* [1] of the Department of Superintendence. The reader will find these suggestive of many others which may be selected for use in the elementary school.

Coöperative work motivates reporting. A requisite condition for motivating reporting is to organize the class into comparatively small groups to study different phases of a common topic. Then the different groups may compete with one another in trying to give the most effective and interesting report. Such groups should work freely and informally together. The feeling that they are working coöperatively on a significant topic is a powerful incentive to learn. The intrinsic value of a problem itself is an essential motivating factor in reporting information. The material should be interesting and valuable to the learner. Real problems and topics should be selected for this purpose, rather than unreal and imaginary ones. The fact that the pupil is to use the ideas he is collecting to inform, to persuade, or to amuse others also gives a genuine motive for activity. One of the very best means of insuring continued pleasure in reporting is success in making a creditable report. Success is made possible when the teacher assists pupils in finding interesting subjects and trains them in the art of making meaningful reports on these subjects.

Planning the report. One of the very first questions which arises in connection with the assignment of the report is, How shall the assignment be made? Shall the teacher impose assignments or shall pupils be permitted to select the phase of the topic or sub-topic in which they have

[1] Pp. 261–81.

an active interest? The answer to these questions depends partly on the purpose of the report and partly on the nature of the subject matter involved. Generally, the teacher and pupils should, together, decide on the nature and the extent of the report to be made. Pupils enjoy this sort of partnership in deciding upon their problems. In most instances, they should then be permitted to choose the subject on which they wish to report. This practice tends to create greater enthusiasm when searching for and collecting information for their reports. It is certainly much more desirable to enlist the coöperation of pupils in making assignments for reporting than merely to issue commands. The pupils will undertake a report more readily and persist in finding and organizing data when they feel that it is a voluntary type of activity.

Directing the child's preparation. As in making assignments for other types of classroom activities, it is necessary to observe certain guiding principles in assigning reports. Among other things, pupils must know exactly what is to be done and how it is to be done. Otherwise, they will have a great deal of difficulty in knowing what is to be emphasized in their reports. Guidance of this sort will call for specific directions dealing with the various phases of each topic, as well as with the particular procedure to be employed in making the report. In fact, all the principles of guidance in making other kinds of assignments are applicable in assigning materials for making reports.

A summary of suggestions. A few specific directions which will serve as guiding principles in assigning subjects for reporting are:

1. Select or cause to be selected a subject or topic which is important. One which permits of extensive investigation is desirable.

2. Have the different phases of the subject so organized as to suggest an urgent need or purpose.
3. Make certain that the topic is within children's experiences.
4. Investigate beforehand the amount of reference materials available and see that they are easily accessible to children.
5. Indicate some of the important phases of the subject or topic to be investigated by the different pupils.
6. Suggest special references for gathering data on these important phases of topics.
7. Stimulate interest in searching for information about topics by making a few introductory remarks, or by relating incidents about some significant phase of the subject, or by using some other means in keeping with good practice.
8. Try to be enthusiastic about the subject of the assignment. Usually enthusiasm is contagious.

Recitation activities in reporting. Some kind of socialized activity is desirable in giving reports. Just what sort of class organization will be most effective in conducting a reporting recitation cannot easily be determined beforehand. This also holds true for other types of recitation activities. It is difficult to predict the success of any organized plan of conducting the recitation without first trying it out with the class. A great many enthusiastic teachers favor the Decroly [1] plan, either in its original or modified form, of conducting the topical recitation. It is quite probable that this plan, modified in some respects, could be satisfactorily employed with pupils in all grades of the elementary school. A brief résumé of it is given here for observation and study.

1. The class is segregated into small groups of 15 pupils each.
2. A common problem is selected for investigation and study.
3. Each pupil selects some phase of a subject or topic which especially interests him.

[1] WASHBURNE, C. W., and STEARNS, MYRON M.—*New Schools in the Old World.* Day, 1926, pp. 66–82.

4. He investigates it by reading, observation, and study.
5. He writes out a full report, giving illustrations and specimens to supplement it.
6. He spends several days—about a week—in preparing his report.
7. When his report is prepared, he presents it to the other members of the class in the form of a lecture.
8. He uses the blackboard, passes out specimens or examples among other children assembled about the tables, and answers questions which are asked.
9. His fellow classmates besiege him with questions both from an interest in the subject and from a desire to find out how well the lecturer knows it.
10. If he is found deficient in important information, the class may require him either to look up the information he lacks, or even re-do the entire report.
11. The other pupils listen and take notes during the lecture or write them up afterwards.
12. The writing up of reports of others, and the preparation and correction of their own reports, occupy the greater part of the pupils' school day.

This method embraces many of the important characteristics of the child-centered school. It provides for individual instruction, project work, socialized group work, and for many other learning activities which characterize modern progressive educational methods. But a careful review of the original Decroly method will disclose a number of weaknesses which must be carefully considered by the teacher before adopting it. These are not indicated here, but the reader may familiarize himself with them by reading the references annotated at the end of the chapter.

Measuring results. If it is found necessary to measure the success of oral reporting, the teacher may organize a list of criteria and judge the report accordingly; or she may personally observe the reaction of the listeners and judge the effectiveness of the report in this way. Written reports

can be measured, as other written work, with objective tests. Other means of measuring ability to organize and compose reports are essay examinations and quizzes. Pupils may also be asked to listen to and to evaluate reports given by others. Usually, however, a good oral report is revealed by the reaction of the listeners. It is also possible to have pupils rate one another's reports on some definite objective scale or check-list. This practice tends to improve reports by making pupils more conscious of their desirable characteristics. A suggestive check-list to be used by pupils in evaluating one another's reports is given below.

A Student's Check-List for Judging an Oral Report

Directions. Draw a circle around "YES" if you believe the reporter was effective on a certain point, or draw a circle around "NO" if you believe he was not.

1. Did the pupil reporting seem to be aware of what his subject was about?	YES	NO
2. Did he show evidence that he had investigated the subject thoroughly?	YES	NO
3. Did he show an interest in his report?	YES	NO
4. Did he keep to his subject or topic?	YES	NO
5. Did he make what he said clear?	YES	NO
6. Did he use illustrative materials or examples?	YES	NO
7. Did he emphasize any important points?	YES	NO
8. Did he lose much time in fumbling with his subject?	YES	NO
9. Did he make any wrong statements about his subject?	YES	NO
10. Did he make any mistakes in language usage?	YES	NO
11. Did his report confuse you about some things?	YES	NO
12. Did he answer questions correctly, which were asked about some phase of his report?	YES	NO
13. Did he show evidence that he had memorized his report?	YES	NO
14. Did he finish any part of his report?	YES	NO

15. Did you think he enjoyed giving his report?......	YES	NO
16. Did you enjoy it?............................	YES	NO
17. Did he convince you about any point in his report?......................................	YES	NO
18. Did he have enough time in which to give his report?......................................	YES	NO
19. Did he appear to be glad to get through with his subject?................................	YES	NO
20. Did he summarize any part or all of his report?..	YES	NO
21. Did you think he should be required to make further study on any particular phase of his topic?...	YES	NO
22. Did you think he should re-do the entire report?..	YES	NO

Educational outcomes. The extent to which pupils have enriched their regular class work by supplementary readings can be quite effectively revealed by preparing a report on these activities. Wide reading is very necessary in order to give fullness to reports. This habit is a good one to encourage, for the informational value of the report will depend largely upon how much collateral reading was necessary in its preparation. Fullness of the ideas contained in the report will depend, in no small measure, upon extensive reading. One writer [1] suggests that certain knowledge is essential to the preparation of a written report. He says:

If a report is to be written, does the child have simple knowledges about correct and incorrect forms of language, punctuation, capitalization, and paragraphing? Does he know how to write a paper from an outline? Absence of these knowledges may be at the base of the failure to appear well before his classmates and may be the basic cause for his lack of interest in activities which have to do with discussion following study.

Summary. The report is a form of class activity by means of which children can most effectively express the results of their investigations and study. In fact, no other

[1] YOAKAM, G. A.—*Op. cit.*, p. 458.

classroom activity is more suitable and economical in furnishing informational material of the nature of research. The use of such information and material will vary greatly, depending largely upon what purposes the reporter has in mind. He may use it to inform others, or to convince and to persuade others, or he may find it practical and desirable to use the information to entertain the other members of the class or group. In this latter instance, his report may deal with animals, objects, persons, and things of an interesting character. The subjects for reporting will vary considerably. Some will deal with civic interests; some with vocational concerns; others with leisure activities; and still others with nature study, art, music, and other school subjects. Many of these subjects are sufficiently attractive in themselves to arouse and carry interest. Their appeal to children's interests will be the one chief criterion of their selection. A topic or subject which does not involve an intrinsic appeal can hardly justify itself for study and investigation. Usually, the teacher and pupils together can most satisfactorily determine what subjects will be most interesting and valuable for reports. It is always wise on the part of the teacher to permit children to have a hand in selecting their own topics for investigation and reporting.

Some modified form of the Decroly Plan can be satisfactorily adapted for purposes of reporting information and materials effectively. Or some other organized plan which the instructor favors for extensive collateral reading and reporting may be desirable. This matter may be most successfully determined through practice in using several forms of class organization. No rigid rule can be strictly adhered to in conducting the recitation activities in reporting. The student check-list for evaluating one another's reports should find an important place in the recitation.

STUDY QUESTIONS

1. How is reporting related to research work?
2. For what purposes may reports be used, other than to inform others?
3. What are examples of topics or subjects suitable for reports designed to entertain? For reports designed to persuade?
4. What is the value of an outline in preparing a report?
5. What kinds of subjects are the most interesting ones to report on?
6. Why is it best to work out the assignment for the report with the pupil concerned in preparing and giving it?
7. What are the main features of the Decroly Plan of reporting information?
8. Why is it difficult to predict the success of any organized class procedure?
9. How may the success of oral and written reports be measured?
10. What knowledge must the pupil have before attempting to prepare a written report?

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CHAPTER XXIV

Reading

Introduction. Just as the child learns through observation of people, things, and events in the real world, through using his body and manipulating things, through memorizing and associating facts and ideas, through experimenting, creating, and problem solving in direct contact with life and events, so he learns vicariously through the indirect medium of the printed page. No study of teaching and learning can be complete which ignores this common aspect of education. Schools are and have been to a surprising extent places where children learn to practice the art of reading.

Reading a language art. Reading is a language art. By means of the printed characters which we call letters and figures, the writer may communicate his ideas to anyone who can read. Thoughts are transferred to paper, records are made of past events, and through the art of reading these thoughts and records, may be communicated to anyone who has learned the art of reading. Owing to the existence of the art of writing and reading, vast strides have been made in civilizing the world because of the possibility of recording the results of experience and handing it down in written form from one generation to the next.

A complex skill. Psychologically and physiologically, the act of reading is one of the most interesting accomplishments man has made. To read the printed page is an act of skill which involves all the higher mental processes—association, judgment, and reasoning. Silent reading is that aspect of reading in which the reader is chiefly con-

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cerned with the interpretation of the record made by the printed page. Oral reading is the art of sounding the words which are represented by the characters on the printed page and interpreting the meaning to another by the use of tone, phrasing, emphasis, and gesture. The process by which he interprets the meaning of printed words parallels the mental processes of the reader in other uses of language. Reading as a psychological process may be fairly simple or extremely complex, depending upon the type of material which is read and the age and maturity of the reader. It is also to be noted that reading the printed page involves emotional reactions of approval, disagreement, sorrow, joy—in fact the whole gamut of human experience may be run vicariously through the medium of the printed page.

The use of the eye in reading. Physiologically, reading is a fascinating study because it makes constant use of the eye, a mechanism which has provoked lovers to joy through its beauty and scientists to admiration through its construction and use. The most marked phenomena of the eye in reading have been studied by psychologists through the use of photographic apparatus. It has been learned that the eye should move regularly and rhythmically along the printed line if reading is to be effective. The eye perceives the printed words during a series of pauses or fixations and tends to take in a word, phrase, or even a short sentence during a single pause. It seems that the eye is a mechanism which adapts itself, under the best circumstances, to reading wholes rather than parts and enables the reader to recognize thought groups, meaningful phrases, etc., as economically as possible. Recent knowledge concerning the use of the eye in reading tends to support the growing idea that the emphasis upon thoughtful interpretation, rapid effective reading, and the perfection of silent thought getting are

fundamentally sound ideas physiologically as well as sociologically.

Other physiological aspects of reading. To the physiological psychologists, the mechanism whereby the reader is able to recognize words and to associate them with their meanings is an interesting study. The teacher should understand something of the physiology of reading, but the whole story of it is too long to tell here. The reader is advised to consult a good book on the psychology of reading for a detailed explanation. It is sufficient to point out that the process of reading involves the neuro-muscular system of the head and chest, with particular emphasis upon the vocal apparatus, in the early stages, and that the processes of association, judgment, and reasoning involve the brain mechanism in its most complicated areas. What is seldom pointed out, however, is the fact that the whole sympathetic nervous system is also involved in reading. Subliminal nervous, muscular, and glandular reactions are probably much more affective than the ordinary reader realizes. It is probably not an exaggeration to say that the reader reads with his whole body rather than with his mind alone. Reading is an act that may cause much muscular, nervous, and emotional fatigue and is fraught with possibilities of evil as well as good. The act of reading requires also that the reader remain more or less physically quiescent for long periods of time. The effect of too much application to the printed page by children often appears in lack-luster eyes and pale cheeks.

The power of the printed page. The tremendous power of the printed page to affect ideas, emotions, and overt behavior is so great that the act of reading is rightly regarded as a potent source for good or evil. The influence of bad books on human life may be incalculable while the

equally potent forces of great books in influencing human ideas and conduct is so great that the individual who reads is constantly bombarded by myriads of words exhorting him to noble ideals and faultless behavior. The nature of reading causes it to be an act of great social, political, moral, and economic importance in the world.

Purpose of the teacher in reading instruction. The only really effective reading is purposeful reading. When we think of reading in the school, however, we must think of purpose from two viewpoints: (1) the viewpoint of the teacher, and (2) the viewpoint of the child. The purpose of the teacher of reading in the early grades of the school is usually to train the child in the art of recognizing and interpreting the words and sentences of the printed page. Later she comes to have as well the purpose of teaching the child to enrich his experience and to gain increased knowledge about life through the practice of reading. Someone has said that the child first *learns to read* and then *reads to learn.* Teachers have often spent entirely too much time developing the mechanical aspects of reading and not enough developing the habit of thoughtful reading for the many purposes which reading may serve. In this chapter, the use of reading as a means of learning is emphasized mainly. We shall, therefore, devote little attention to the problem of teaching the child to learn the mechanics of reading.

Why the child reads. From the child's point of view, reading is done for several different major reasons. First, the child may read because the teacher or his parents want him to read. Second, he may read because he enjoys reading for the recreation it affords. Third, he may read because reading will furnish him with useful information of either remote or immediate value. Both recreatory and informational reading are highly useful and important. Reading

under the compulsion of some adult with no joy in reading and no realization of its purpose or values is a very poor type of learning activity and usually does not result in the development of either skill in reading or good reading habits. For successful reading practices, the arousal of interest in reading for its own sake is essential. Unless reading may be used to satisfy the needs of the child in some direct way, the value of it to him may be very doubtful.

As far as the writers know, seldom if ever have children been consulted as to why they read. An unpublished study by Dr. Gladys Hathaway, which is quoted with her permission, throws some interesting light on the question. Children in grades one to eight were asked to write themes on, *Why I Read.* The following are statements made by the children in their own words:

1. Once I began reading because some boy I know was telling me a story. When he was about in the middle (of it) I got so interested I said, "You don't have to read, but will you lend me the book?"
2. You have to learn to read to get somewhere in the world.
3. If you read, the thought that is in the book will get into your head.
4. Reading makes you a detective to see through the world.
5. I read for comfort and pleasure.
6. I read when it rains and I have nothing else to do.
7. I like to read stories that make you laugh.
8. I want to learn to read so I can be a robber.
9. I read to find out what to do.
10. I want to be able to read the notes that my mother writes to the butcher and baker.
11. So I will be able to read a book like my brother Bill does.
12. When I read on a bottle that it has poison in it I will not touch it.
13. I read to learn about people.
14. I read to know my way on the streets.

15. After going to see an airplane I read about it.
16. I read so I will not be dumb.
17. So my boss won't think I didn't learn when I went to school.
18. Reading is good for your eye strength.
19. If there is an ad in the paper, your dog is lost, then you can read the ad.
20. I read to be happy.
21. I like to read because it controls my mind.
22. If you read an interesting story it makes pictures in your mind.
23. To make teacher happy.
24. Reading takes you through imaginative lands and past history.
25. Reading affords you mind traveling instead of actually doing it.
26. Reading gives you the advantage of learning in a pleasant way.
27. Reading takes you through the life you would like to have lived.
28. Poems even tell me the meaning of life.
29. So I won't have to bother Mother to read to me.
30. To quiet my nerves.

While some of these reasons may sound suspiciously adult, they also give internal evidence of genuineness and reveal some astonishingly precocious ideas among these children. They suggest that if teachers would take care to develop worthy purposes for reading they might be astonished at the results.

The significance of purpose to the teacher. Since the teacher asks or requires that the child read a great deal, it is highly important that through the setting up of situations favorable to reading, through the arousal of interest and purpose, she get the child's coöperation in all types of activities in which reading is a part. Purposeful reading eventually becomes effective reading. It is particularly important in informational or work-type reading, so common in ge-

ography, history, and elementary science, that the child comes to understand what he is reading for, what he is to read, what he is to do with what he reads, and why such reading is desirable. Unless he does understand, work with books may be a very disagreeable and dissatisfying task. Aside from that spontaneous reading which a child does for the pure joy of reading, there are many more serious types of reading into which he must be inducted and in connection with which he must, at least in the earlier stages, exercise his will to persist in the act of reading. Ultimately, however, what he reads must be meaningful and worth while to him. Nevertheless, he may come to adopt purposes which he himself does not originate. The skillful teacher will direct the child in such a fashion that he rapidly acquires new interests and new purposes which will furnish the impelling force that causes him to engage in reading for its own sake.

Making reading interesting to the child. By inference the preceding section treats of the problem of motivation in many of its aspects. In the past the teacher depended more often, perhaps, upon extrinsic than upon intrinsic motivation. This was because textbooks often contained material of adult, rather than of child value. As long as the makers of readers did not consult the interests and needs of children, it was necessary to introduce elements into the technique which were calculated to *motivate* reading. With the change in emphasis to investigation of children's needs and the tendency to set up specific purposes for reading, the need for extrinsic motivation has largely passed. Children now seek to read for information and pleasure, guided by the need for knowledge and for relaxation and enjoyment. In the practice type of lesson it is difficult, at times, to provide for intrinsic interest in the material due to the

fact that the attention is concentrated upon some mechanical aspect of reading. Makers of readers are, however, learning to do away with a large part of the extrinsic motivators and to teach skill in the mechanics of reading through the act of reading for specific values to be found in the material itself. Drill exercises are motivated, if necessary, by the challenging nature of the exercises themselves, or the use of charts, graphs, and other concrete devices. The major emphasis is, and should be, however, upon the value of the reading experience itself.

The materials of reading. The subject matter of reading as an act of learning is as wide as the school curriculum and beyond. Primary reading matter ordinarily makes a strong appeal to the child's interest in narrative. Nursery rimes and jingles, folk tales, fairy and animal tales have long been used to arouse the interest of the child in learning to read. Within recent years, however, makers of readers have been experimenting with non-imaginative, factual prose about contemporary life. While children seem to prefer the story form, it is also becoming apparent that they can be interested in expository and descriptive writing as well. There is a tendency, then, to use a mixed type of material in teaching children to read and to furnish them with a varied diet of reading material throughout the elementary school and beyond.

Use of factual material. Marked emphasis upon teaching children to read more adequately the factual material of their school textbooks has been apparent in the last few years. Tests have consistently shown that pupils who have been trained to read story material exclusively have difficulty in adjusting themselves to factual material such as is met in geography and history. This difficulty is due to differences in vocabulary, structure, style, content, and

type of mental reaction required to read such materials. In progressive schools, it is not uncommon to find teachers directing the reading, and teaching the children to read more adequately their textbooks in history, geography, and science.

A wide range of subjects necessary. The range of material which children are asked to read for various purposes is very great. A simple enumeration of the literature available for children would show that folk tales, fairy tales, myths, legends, fables, epics, romances, ballads, poetry, songs, rimes, and jingles of both ancient and modern variety are included in their readers. Picture books, history, biography, geography, travel, adventure and mystery stories, nature stories, applied science, physiology, hygiene, citizenship, vocations, gardening, occupations, and sports are written for children or borrowed from materials written for adults. Dramatic literature is drawn upon as well as sacred literature. Current events are presented in the form of children's newspapers and magazines. Adult newspapers carry comic and story sections chiefly for children. There is evidence of the intent of writers and publishers to provide material for children in all the major classifications of literature.

Use of textbook and other materials. In addition to the books written primarily for children's amusement and information, there is a vast quantity of textbook material labeled reading, history, geography, arithmetic, nature study, physiology, hygiene, and civics, which the child is often required to read and master as one of the chief activities involved in learning. Many children rarely come into contact with original sources but receive practically their entire knowledge of literature through the medium of the textbook. One of the commonest of sights is to see a

child "studying" a textbook in an effort to memorize facts for later regurgitation in a recitation. Subject matter of the traditional kind is contained in textbooks. Many are now trying to bring about a changed condition. They would like to have the child go to books to find things that he needs in order to live his life rather than to have him forced to study books without any clear realization of their values or meanings. It is the teacher's duty to direct the reading of books so that they will have meanings for the child when he attempts to read them. Otherwise, verbal memorizing is an inevitable result.

Wider reading desirable. Printed matter of various kinds, then, constitutes the material by which the child gains experience vicariously. In the modern school, the senseless memorization of words in books is discouraged. On the other hand, the need for reading is not less pressing than before. While subject matter for the child may consist of experiences of all kinds, reading furnishes one type of experience which is essential in intelligent learning. The important consideration is to furnish the child with a stimulating environment in which the desire to read may be established and the practice of reading may be improved. Skilled direction in reading will encourage the child to read in wider and wider circles. Subject matter includes human records in printed or written form which have been selected for the use of children.

Directing independent reading. When children are being directed to books for reading and study, assignment becomes an important consideration. An intimate knowledge of the material to be read on the part of the teacher is, obviously, often very essential. Stimulation to read through the creating of, or the recognition of, needs for reading is essential. Purposing and planning are essential activities

in a good assignment when reading is to be the major activity of the study period.

The assignment takes on various forms in the reading type of learning. In general, there are three types: (1) the practice type; (2) the recreatory type; and (3) the work type of assignment.

1. *The practice type.* The practice type of assignment occurs when the teacher directs the child to practice to overcome some error or to develop some needed skill. This type of assignment should occur, generally, only after the child has met some difficulty and discovered an error. An example may be suggested as follows.

Find in the following list of words those words which have the same endings. Write them in columns on your paper.

fall	hair	girl	flow
nice	tall	toy	fine
fair	advice	stall	slow
ball	wall	joy	annoy
mice	boy	whirl	mine

Practice on such lists would lead to a better command of words and improved skill in word recognition.

2. *The recreatory type.* The recreatory reading type of assignment should take the form of a planned activity which is designed for the fundamental purpose of enriching experience and providing the child with recreation of a wholesome sort. Such assignments should be relatively free from specific, hard and fast requirements and should encourage the development of initiative and independence. The recreatory reading assignment may often take the form of suggestions for activity rather than of detailed specific directions. In fact, about all the teacher will need to do in such recreatory reading is to furnish the material and the opportunity for the child to read. In addition, it is neces-

sary to introduce new materials to children and to seek to develop their interest in new types of literature and reading. The recreatory reading assignment may take such forms as the following:

1. Reading to find material for dramatization
2. Reading to prepare for a discussion during the club hour
3. Reading just for fun
4. Reading to entertain others
5. Reading to enjoy a new experience
6. Reading to relax from hard mental or physical work
7. Reading to enjoy beautiful diction, style, and imagery

In fact, there are endless possibilities in the recreatory reading assignment for worth-while experiences.

3. *The work type.* The work-type reading assignment is a more serious and purposeful affair—at least it is more serious in that the reader is here to engage in reading to find information of assumed value for a specific purpose. The teacher of reading should give emphasis to work-type reading in her systematic training periods. Teachers of history, geography, and other subjects must also learn the techniques of assignment for the work or study lesson in reading. The fundamental conditions of a good assignment in this type of reading are:

1. *Clear objectives.* The child must have clearly in mind in general what he is reading for.
2. *Suitable materials.* The school must provide interesting factual materials suited to the child's abilities, well organized, illustrated, and indexed.
3. *Skill in mechanics of reading.* The child must develop the ability to attack new words confidently and effectively, and to read with rhythmic eye movements and without lip movement. He must have the habit of thoughtful interpretation to succeed in this type of reading.

4. *Effective direction.* The teacher must be able to direct work-type reading effectively by means of outlines, problems, questions, and suggested activities. The assignment must be specific and definite and as detailed as the stage of development achieved by the pupils demands. Individual differences must be recognized and provided for in the assignment.
5. *Skilled appraisal.* The teacher must provide tests of comprehension and mastery either of the essay or objective type or both. Self-appraisal tests are desirable. The child must know how well he has achieved and what remains to be done in order to achieve desirable results.

Since assignments of the work type involving reading are so considerably a part of what is commonly looked upon as study, attention to improved assignments of the directed-reading type should yield large returns in increased achievement among pupils.

Types of class activities. " Recitation " was for a long time literally a *re*-citation of what the child had learned either by ear or by reading. The chief evil of the recitation of this older type was the meaningless mouthing over of words often unassimilated by the pupil. Literal reproduction of the exact words of the textbook led to parrotlike repetition of meaningless verbal symbols. This type of recitation was the refuge of the lazy or incompetent teacher. Bereft of this type of activity following a study period in which the pupils have read or studied books, what shall the modern teacher do?

There are many types of recitation activities which may profitably follow a study lesson of the book type. Discussion, reproduction, dramatization, demonstration, practice, organization, planning, problem solving, creative writing and speaking, testing—these and many other activities offer a chance for a great variety of profitable experiences in the recitation or conference period. There is

no excuse for the common practice of using the recitation merely as an oral examination exercise with incessant questions and answers. If it is desired to know how well the pupils have assimilated what they have read, that can be learned more economically and certainly by the administration of an objective point test. The recitation, following a work-type reading assignment, should offer an opportunity for the teacher to supplement the text, enrich the meaning of what has been read, clarify the thought of the author, correct wrong impressions gained from the material, test the power of the pupils to think independently, suggest new problems arising from the contact with the material, and stimulate the planning of new activities and new reading projects. Unless the recitation period does these things, the pupil had better continue his study. The periodic remedial work necessitated by the discovery of errors of thought and method in the work of the pupils and specific practice and drill are, of course, also legitimate recitation activities.

The measurement of reading. The measurement of reading activities is a complex problem. Simple tests of rate and comprehension present no great difficulties, but the problem is far more complex than that. To get adequate data on the effectiveness of reading, it is necessary to measure vocabulary, comprehension, organization, retention, appreciation, and ability to solve problems through the use of reading material. Comprehension itself is a complex ability, analyzed by some writers into word, phrase, and sentence comprehension. Organization involves among other things ability to find the central thought and the supporting details, to outline, and to summarize. It is an assimilative activity of marked complexity and of great importance in work type reading especially. Appreciation, again, is difficult to measure, since it has an intellectual,

an æsthetic, and an emotional aspect, each of which is somewhat difficult to appraise on account of its subjective nature. The ability to read analytically, to solve problems through reading, and to apply data gathered from reading to new situations involves a thorough training in reflective thinking as well as special reading abilities of a high order. All of these special abilities are subject to measurement.

1. *The use of informal tests.* The teacher needs to be very well trained in the making of informal objective tests for the purpose of both diagnosis and measurement of achievement. She must plan her tests not only to measure general comprehension or assimilation of the ideas developed in the material read, but also as diagnostic devices which will reveal fundamental weaknesses in reading ability and hence lead to remedial instruction designed to correct and improve the child's power to read more and more effectively. This program of informal measurement should extend into all the subjects of the school and should result not only in mastery of ideas but also in improved reading techniques.

2. *The use of standardized tests.* The use of standardized tests, while desirable and often very helpful, cannot take the place of the many informal objective tests which must be made by the teacher. There are, however, standardized tests which will appraise reading ability quite adequately and which should be used periodically for this purpose. Among the best of the standardized reading tests are the following:

Detroit Word Recognition Test (Grades 1–2). World Book Company.

Gates Primary Reading Test (Grades 1–2). Bureau of Publications, Teachers College, Columbia University. Published in three parts:

Type 1. Word Recognition
Type 2. Word Phrase and Sentence Comprehension
Type 3. Directions

Gates Silent Reading Tests (Grades 3–8). Bureau of Publications, Teachers College, Columbia University. Published in four parts:
Test A. Paragraph Comprehension
Test B. Predicting Outcomes of Given Events
Test C. Directions
Test D. Reading to Note Details

Gray's New Standardized Oral Reading Check Tests (Grades 1–9). Public School Publishing Company.

Haggerty Reading Examination (Grades 1–12). World Book Company. Published in two parts:
Sigma 1. Grades 1–3
Sigma 3. Grades 3–12

New Stanford Achievement (Grades 2–9). World Book Company. Contains a good reading test also published in separate form. The test comes in two parts: primary, for grades 2 and 3; advanced, for grades 4–9.

Sangren-Woody Reading Tests (Grades 4–8). World Book Company.
Contains seven different parts measuring different aspects of reading ability.

Thorndike-McCall Reading Scale (Grades 2–12). Bureau of Publications, Teachers College, Columbia University.

Sources of information on informal tests. Excellent suggestions for making informal objective tests are to be found in the following:

LANG, A. R.—*Modern Methods in Written Examinations.* Houghton, 1930.

RUSSELL, CHARLES—*Classroom Tests.* Ginn, 1926.

RUCH, G. M.—*The Objective or New-Type Examination.* Scott, Foresman, 1929.

It should be borne in mind by the teacher that the test is far more appropriate as an exercise following a work-type or study reading lesson than a recreatory lesson. When pupils do serious work, they naturally expect to be tested

to determine whether or not they have been effective in their work. Neither do they resent the diagnostic test; but long, laborious tests following a lesson of a recreatory type in which relaxation or æsthetic experience has been sought for its own sake are generally inappropriate. This does not deny the necessity of testing the pupils' understanding or remembrance of important characters and events in literature or of measuring appreciation of thought in recreatory reading. It is generally better, however, to confine the heavy testing to work-type material of a decidedly important content.

Diagnostic work. Measuring the ability of children to learn through reading involves the diagnostic measurement of abilities involved in reading. That is most accurately done by means of well-constructed standardized tests, individual laboratory tests, case studies of individual pupils and free use of informal teacher-made objective reading tests which may be organized after the models given by good standardized tests, mimeographed, or hectographed, and administered as needed. Test exercises, such as the McCall-Crabbe *Standardized Test Lessons,* may then be used for practice exercises in the improvement of specific abilities. Some of the modern workbooks in reading also contain excellent practice material for use by children weak in the fundamentals of reading. Such practice exercises, however, should supplement, rather than take the place of reading material in its natural context for the many specific purposes for which reading materials may be used.

Summary. Reading is a type of learning activity by means of which the child gains vicarious experience. Just as he learns directly through the eyes, ears, and other senses from the world of living and moving things, so he learns

indirectly through the printed page of the thought world which is communicated to him through books. Reading is a language art. Printed characters are artificial, arbitrary signs of words. The art of reading involves interpretation of these word signs in their various complex relationships, the interpretation of the meanings of language in written or printed context, and the making of all sorts of physical, mental, and emotional reactions which may result from exposure to language in the written form. Reading is a complex language activity which defies complete analysis just as all mental life defies analysis in its more complex areas. Nevertheless, complex as it is, reading is better known than it once was. The importance of the art of reading lies in its use by human beings in enlarging experience vicariously. The printed word is a potent means of influencing conduct for good or ill. The purpose of teaching the child to read is to give him command of a tool with which he can enlarge and enrich life. The school first teaches him the control of the mechanics of reading and then continues to attempt to teach him by means of the use of this tool, to become familiar with the important records of human thought. A large part of the activities of the school involves the use of reading in various ways.

Reading in life and school is of three major types—reading for practice, reading for recreation, and reading for information. The latter type of reading is called work-type or study reading. In the latter type of reading, common in all the school subjects, it is important that the child be active, purposeful, and interested in what he reads. In all reading it is necessary that he gain command of the necessary information, skills, and habits that make such reading successful. Reading to be successful must be satisfying to the child.

For its subject matter, the reading type of learning looks to textbooks, reference books, children's classics, history, geography, science, biography, travel—in fact to the whole range of life as it is portrayed in books. There is a marked tendency today to train the child to read not only story material of the traditional types but also factual material of a wide variety of content.

In teaching the child to learn through reading improved assignment is essential. The child must know what he is to read and why he is to read it. In reading the material, he must meet no insuperable difficulties. Definite, specific assignments are necessary. Skilled direction of reading is now becoming a more common practice.

The recitation activities following a reading assignment should be of such a nature that they supplement and enrich the pupil's experience rather than merely test his comprehension or his ability to reproduce or recite. Discussion as well as creative thinking is essential in the effective recitation.

Measurement of reading in learning is a complex problem best solved by the use of a combination of standardized reading tests, informal objective tests, case studies, laboratory tests, and remedial practice exercises of a great variety of types.

STUDY QUESTIONS

1. What is the importance of learning through reading?
2. Describe in a general way the nature of the reading process. Define reading.
3. What purposes does reading serve in the school?
4. Why is purpose important in guiding the reading of the child?
5. What subject matter is included in the reading activities of the school?
6. Discuss the importance of factual reading in the modern school.

7. Why is assignment important in activities involving reading?

8. What type of assignment is advisable in connection with work-type reading?

9. What type of recitation activities should follow a study activity involving reading?

10. Why is measurement important following a reading assignment?

11. What types of measurement are useful in appraising the effectiveness of a reading assignment?

12. Summarize the chapter briefly from the written summary at the end of the chapter.

SELECTED REFERENCES

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5. GRAY, W. S.—"A Summary of Investigations Relating to Reading": Supplementary Educational Monographs. University of Chicago Press, 1925.
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8. O'BRIEN, J. A.—*Silent Reading.* Macmillan, 1922.
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9. PATTERSON, S. W.—*Teaching the Child to Read.* Doubleday, Doran, 1930.
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10. SMITH, W. A.—*The Reading Process.* Macmillan, 1923.
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PART V

TEACHING AND LEARNING BY WHOLES

The most effective learning is, in life, by wholes. It takes place as an aspect of some larger activity. Schools are now seeking to develop integrated activities in which the social, æsthetic, and other elements are a natural part of a lifelike, natural, and meaningful whole, not the study of life in an unnatural and unlifelike setting. No study of the techniques and activities of teaching and learning would be complete without an adequate consideration of these learning activities. They are generally known as projects or project units, problem units, subject units, or activity units. In the fifth part of this volume, then, an effort will be made to show how the discussion in the preceding parts is related to the integrated activities of school and life; to show how integrated activities proceed and how recognized techniques, more or less generally approved, are used to make them successful.

CHAPTER XXV

Integrated Teaching and Learning Activities

Introduction. In the traditional school teaching has always proceeded as a means of making children familiar with bodies of knowledge and as a way of developing skills and abilities necessary in carrying on the ordinary affairs of life. Neither the teacher nor the child is ever engaged in management as a separate activity, nor in observational learning as an activity divorced from the observation of something. It has been implied in the preceding chapters that the teacher is always teaching something and that the child is always learning something. We have been engaged so far in studying the way in which the teacher teaches, the way in which the child learns, and the tools he uses in learning. We have not as yet considered what the child should learn nor, in general, how his learning should be organized. For a long time schools have taught subjects. These subjects have been organized bodies of knowledge arranged in a more or less logical fashion. It has been assumed that these subjects should be taught to the child. Recently there has been a tendency to challenge teaching by subjects in the traditional manner and to attempt to organize teaching and learning more psychologically. Most of the readers of this volume will have been educated in a school which taught by subjects; therefore, the previous discussion will seem immediately applicable to them. Should they, however, be introduced to a new type of teaching in which subject matter is integrated, and should they not find in the program of the school separate periods for the

teaching of reading and writing, history and geography, they might be confused and fail to understand the nature of teaching and learning as conducted in some modern schools. It seems necessary, therefore, to present a discussion of integrated teaching and learning activities in order that the reader may be oriented with respect to forms of modern education in which these are emphasized. This the writers will attempt to do as adequately as possible without necessarily endorsing the views of those who advocate any particular type of school organization or any special theory of learning, hoping that the reader will be able to judge for himself which kind of teaching and which kind of learning seems to him to be most in keeping with what he knows of the way in which children learn or should learn.

The meaning of integrated learning activities. By integrated learning activities is meant those kinds of activities in which children achieve knowledge and skill in relation to their use in some purposed or planned activity and in a meaningful whole, as contrasted with the learning of facts or skills in isolation and without reference to their practical use. According to those who believe in what is called the new learning, the child should learn in a natural setting those things the value of which he can see and which he wants to use for some specific purpose. True learning is whole-hearted and purposeful. Such activities use subject matter as a means toward ends rather than as an end in itself. Sometimes they tend to do away with the study of subjects in the traditional manner and to substitute for formal study of subjects, activities or units of work which may be labelled neither history, geography, science, nor mathematics but a fusion of these subjects into a meaningful whole. Sometimes they still retain a subject organiza-

tion. They tend to include constructive activities, the making and doing of something, rather than the abstract study of history or geography without reference to its immediate purpose or use.

Activity schools purport to be natural and informal rather than artificial and formal. They aim to do away with the memorizing and reciting of useless facts and the learning of useless skills, to substitute for such learning direct experience with life and things, and to use books as sources of information and ideas to be used in carrying out life activities rather than to be memorized for their own sake or for some future use in adult life.

Not all experiments with integrated learning activities follow the same pattern, however; they vary in accordance with the theories of those who use them. In American schools at the present time an observer will find two contrasting types of integrated units, the subject unit and the activity unit. The subject unit keeps within the bounds of the subject but aims to teach the subject as a meaningful whole. The activity unit tends to disregard subject boundaries and seeks to make knowledge whole by using it to throw light on the current problems which a child meets in his learning and doing.

To the extreme proponent of the activity theory, the arts of reading, writing, number, drawing, language, music, and the like are tools to be used in living and doing, not to be studied for themselves alone. To these theorists it is wrong to force a child to study these tools until he finds a need for them in carrying on his life activities. In the traditional school, tools are taught and practiced in preparation for their use. In the activity school, they are learned and practiced when there is a need for them.

It is in connection with the learning of skills and the

systematic assimilation of knowledge from books that the proponents of integrated activities and the defenders of the traditional curriculum come to most marked disagreement. To the writers a middle ground does not seem impossible. Some leaders in the activity group compromise by having periods for so-called skills and drills in which the arts of reading, writing, spelling, and number are practiced. This seems a very wise provision. When, in addition to this, periodic summaries and reviews of what has been learned in activities of various sorts take place, much of the objection to the unsystematic procedure of some activity schools is removed.

Types of integrated learning activities. The integrated learning activity is represented by four major types which are arranged here in the approximate order of their development; the project unit, the problem unit, the subject unit, and the activity unit. The project, or project unit, entered the school first in school plays, programs, and socials which antedated the first use of the term project. The problem unit developed either simultaneously with the project or earlier. The subject unit may be considered an outgrowth of the problem unit and project. The activity unit is descended from the project unit, draws ideas from the problem unit, and differentiates itself as sharply as possible from formal subject study and the subject unit as such. In the following pages each of these types of integrated activities will be discussed.

The project. The project, or project unit, apparently originated in the field of vocational education, from which it was borrowed and adapted to general educational practice. Since its adoption in general education, the project has had considerable influence on the traditional school curriculum and older procedures of teaching. It is rightly con-

sidered the forerunner of the unit activity of today. Its greatest contribution has probably been to the motivation of learning in traditional school work.

A project is a large unit of work of a natural and lifelike character carried on in a natural setting. In it a problem involving the doing or making of something is attacked as a whole. It is highly purposeful and involves the completion of some undertaking, which may be manual, manual-mental, social, or almost purely intellectual. It is most easily discernible when it appears as a concrete undertaking such as the making and equipping of a doll house, the construction of a piece of handwork, or the writing and presentation of a play. It involves many different types of activity, draws its materials from any appropriate source, often disregards subject lines, and represents an integrated experience.

Authorities have differed in the past in their definitions of the project. One discussion [1] characterizes the project as a point of view rather than a method. Other writers [2] regard the project chiefly significant as a means of motivating school activities. Charters [3] thinks of it as a method of carrying on a problematic activity in its natural setting. Parker [4] believes that the project is a unit of activity in which pupils are made responsible for planning and purposing. Kilpatrick [5] in his discussion of the project includes four types, as follows:

1. "The Producer's Type," in which the emphasis is directed toward the actual construction of a material object or article.

[1] HOSIC, J. E., and CHASE, S. E.—*A Brief Guide to the Project Method.* World Book, 1925, pp. 7–75.
[2] WILSON, H. B., and WILSON, G. M.—*Motivation of School Work.* Houghton, Mifflin, 1916, pp. 250–66.
[3] CHARTERS, W. W.—*Curriculum Construction.* Macmillan, 1923, pp. 137–46.
[4] PARKER, S. C.—*General Methods of Teaching in Elementary Schools.* Ginn, 1919, pp. 324–29.
[5] KILPATRICK, W. H.—*Foundation of Method.* Macmillan, 1925, pp. 244–71.

2. "The Consumer's Type," where the objective is to obtain either direct or vicarious experiences, such as reading and listening to stories, listening to a musical selection, observing a beautiful picture, etc.
3. "The Problem Type," in which the chief purpose is to solve a problem involving the intellectual processes, such as determining the density of a certain liquid.
4. "The Drill Type," where the objective is to attain a certain degree of skill in a reaction—as learning a vocabulary.

There seems to be the implication here that any type of teaching or learning experience may become a project and that the distinguishing thing about a project is the purpose or drive of the learner, as distinguished from the passive attitude which is said to characterize formal learning of the subject type.

To the writers the project seems to be a purposeful activity directed to some specific end which is understood by the learner, which he has helped to develop, and the outcomes of which he finds interesting, valuable, and worth the effort. It is our belief that the project is an earlier form of the present activity unit and that the difference between the two lies chiefly in a change of name and the more complete understanding of purposeful learning evidenced in the activity unit.

The problem unit. The problem unit is in reality an undertaking of a problematic character, chiefly intellectual in nature. The problem unit does not necessarily involve a concrete activity of the manual type, although it may do so. In that case it may be called, we assume, a *problem-project.* The problem unit is distinguished from the traditional type of subject instruction in that it approaches a topic, unit, or subject from an inductive viewpoint. Some claim that the problem method is a natural method of learning. In the case of the problem unit, then, the student

starts with a felt need and proceeds, through a series of problematic questions, to collect, assimilate, and organize information according to the central idea of the problem studied. Such a unit includes a major problem or problems and many subordinate problems which naturally arise in connection with the unit. For instance, a study of Latin America may be approached as a major problem—"What are the important relations between Latin America and the United States?" This major problem furnishes a theme or thread which serves to give unity and continuity to the study of Latin America. The minor problems are worked out by the teacher in advance and the pupils approach the study of the region as a whole but with definite problems in mind and in a spirit of interest and curiosity which, say its proponents, never characterizes the logical approach. Sometimes these so-called problems included minor projects used to give concreteness and interest to the study. For instance, in the study of Latin America, a sand-table project illustrating some aspect of the political, social, or economic life of Latin America might be carried on simultaneously with the problem study. This method is a compromise between the project, as advocated by its most enthusiastic admirers, and the logical subject method of the traditional school. That this is a distinct step toward the activity unit can hardly be denied.

The subject unit. A later development in the direction of integrated learning is the subject unit, or the unit plan, as it has often been called. This unit plan is not dissimilar to the problem unit, but merely an outgrowth of it. A subject is divided into meaningful units. There is not necessarily any integration with other subjects. A study of *The People of Other Lands*, for instance, may be composed of a series of unit studies dealing with the Dutch people, the Chinese,

the Arabs, or the Eskimos. Each of these peoples may be approached from either the logical or the problematical point of view. Many elaborations are possible. For instance, Kelty, in her *Teaching American History in the Middle Grades*, develops an elaborate plan for teaching American history by units with preparation, presentation, exploration, assimilation, organization, and examination, worked out in a very definite fashion. Each period is studied as a whole. The older type of assignment, textbook study, and recitation yield to a scheme of directed study in which the child is made largely responsible for finding, assimilating, organizing, and mastering the material. In connection with such units various types of manual, expressional, and dramatic projects may be employed. There is little question that while subject units are not completely integrated learning activities, they go a considerable way in making learning purposeful and meaningful and may have many of the advantages of the more loosely organized activity units without their disadvantages. They approach the subjects as wholes. They encourage initiative on the part of the pupil and tend to develop independence, resourcefulness, and other desirable traits.

The activity unit. The activity unit is regarded by its proponents as the only true integrated unit. It purports to represent a lifelike child activity. It involves the study by the child of his physical and social environment from an active point of view. It is regarded by its advocates as a natural and truly functional medium of education. In the primary grades the activity unit may involve the study of community life, primitive life, the circus, or any aspect of life which interests the child. In the intermediate grades the study of transportation, communication, agriculture, aviation, or any other aspect of life which touches on the

child's experience may be undertaken. In such studies subject lines are disregarded. History, geography, music, art—all the subjects of the school—contribute to the central activity. The school day may be divided into divisions of any kind which seems to meet the needs of the pupils. In connection with such units, progressive educators claim that they are attempting to develop a natural and integrated type of experience, to break down subject walls, to do away with the formalism of the traditional school, to educate the whole child, and to emphasize true learning in all its aspects. A great deal of emphasis is laid upon the development of interest, responsibility, good work habits, creative work, and social traits. That this type of teaching is gaining ground there can be no doubt.

Objections to the activity curriculum. It is only fair to say, however, that the activity theory meets with opposition from many important educators, both on theoretical and on practical grounds. Some educators think that the implications of the activity theory are unguided freedom, a dabbling with knowledge, unsystematic and disorganized teaching, and failure to develop the fundamental skills needed everywhere in life. They are not convinced that the claims of those who regard the activity curriculum as the solution of educational problems are sound. They regard the activity unit as an experiment which is as yet inconclusive. They believe that its advocates are unduly worked up about the child and his needs and that they are overemphasizing the need for following his interests. The progressive attitude, they say, leads to pampering, to sentimentalizing, and to neglect of the fundamental training which is every child's birthright.

A statement of the writers' viewpoint. The writers of the present volume take a position midway between the

extremes. To them it seems that it is not necessary to adopt either an extremely conservative point of view, nor yet to go to the other extreme and adopt, without due trial and experimentation, the extreme views of some of the enthusiasts on the progressive side. Under ideal conditions, an activity curriculum may be a very absorbing experiment. Under practical conditions, it may be unwise and inexpedient. Nevertheless the student of teaching should be acquainted with the activity theories and be able to judge for himself how far he thinks the idea applicable to his own needs and the needs of his school. It seems to the writers that there are many good ideas on the progressive side. The integration of knowledge they believe to be desirable, but such integrations as are desirable need not demand the abandonment of school subjects entirely, nor the adoption of a plan of instruction which neglects the systematic development of skills and the assimilation of knowledge. Nor are the writers convinced that the arguments of the activists are equally valid for all levels of instruction from primary school to college. While integration of knowledge is no doubt a highly desirable goal, integration may best be attained after a systematic study of a field, rather than before such study or simultaneously with it.

The writers do not believe that the present activity curriculum is likely to be permanent. Just as in the past the activity unit has developed from the project, so in the future the activity unit may give way to some subsequent theory of instruction which will seek to provide for a more comprehensive and systematic study of history, science, and social science than is implied in many of the present activity schools.

That there are obvious weaknesses in the activity theory will be evident to the unprejudiced observer. In activity

schools children often fail to learn to read, write, perform fundamental processes in arithmetic, and make satisfactory progress in achieving skill in written composition. Their knowledge of history, geography, and elementary science is often incomplete and fragmentary. In activity schools, in the opinion of the writers, systematic attention to skills, frequent reviews, diagnostic and remedial teaching, and comprehensive surveys of results, not only in the development of skills but also in the acquisition of knowledge, are desirable. Sometimes too much is made of the development of attitudes, interests, and flexible traits. While important, they are not the whole. Knowledge and skill must be developed. The writers suspect that in those activity schools in which marked success is gained in skills and knowledge, there is more systematic teaching than some theorists would like to acknowledge.

The subject unit and activity unit compared. The chief service performed by integrated activities seems to be to improve teaching and learning organization. A subject unit offers many advantages not obtained from the use of the daily assignment. More care is taken in developing an effective plan of work. The child is led to see not only the lesson for the day but the sequence of lessons that makes up a meaningful whole and how the parts fit into the complete picture. When the subject involves activities and projects in which the knowledge and skill gained are used in meaningful ways, the subject unit undoubtedly leads to assimilation of ideas and mastery of subject matter and skills.

The activity unit, according to its defenders, offers many advantages over the older types of teaching and learning. Its function is to develop in the child the tendency to more vigorous reaction, a greater alertness, and a more purposeful attitude. It offers the learner an opportunity for plan-

ning, organizing, and assimilating ideas. It encourages selective thinking. It makes learning real by causing the products of learning to be applied immediately. It develops understanding of the meaning of life, instead of verbal memorizings which may mean nothing to the child. All in all, the activity unit, as contrasted with study of the older type, is claimed to represent genuine experience rather than unassimilated formal knowledge.

The value of the activity unit in establishing habits and skills is not so obvious as in initiating, motivating, and developing activities. It is more difficult to get a learner to practice a needed skill than to engage his interest in the collection and organization of material for specific purposes or in carrying on some manual activity. It is conceivable that adult learners will engage readily in integrated review and drill activities, as in preparing for an examination or in getting ready for a job. Undeniably, unit activities of various types may bring out the need for practice and encourage children to assume a more purposeful attitude toward it; but drill activities are conspicuously absent in the literature of activity teaching.

It appears, then, that the chief difference between the subject unit and the activity unit is in the attitude of the users of these methods of organizing teaching and learning toward subject matter. The subject unit is based upon the idea that it is the function of the school to give the child systematic guidance in the assimilation of knowledge and the development of skill. The activity unit places a major emphasis upon experimentalism. Its proponents believe that the subjects as such are adult organizations of knowledge and that children should study life more directly, utilizing subject matter where it is useful in carrying out undertakings. To the writers it appears that each of these

points of view is likely to contribute something of value. The systematic organization of the subject unit may have a good deal to offer in the way of suggestion to those who are experimenting with activity units. The activity unit, on the other hand, may have something to offer in the way of organization to those interested in subject units. In a large majority of public schools one is likely to find either a traditional subject organization, a subject unit plan, or a modified type of activity organization.

Subject matter and unit activities. Problem, project, and subject units may be organized in almost any subject of the curriculum. In such units, a major emphasis is placed on securing mastery of ideas and of skills, with a minor emphasis on the activity itself as a means of improving the child's interest and sense of value of the subject matter. Projects of the manual type, such as growing an acre of corn, making a footstool, making a dress, or preparing a luncheon, may readily be developed in the vocational subjects of agriculture, manual arts, and home economics. Problem units may also be organized in these subjects, but they are more common in history, geography, arithmetic, and science. Before deciding on what type of activity is best suited to any of these school subjects, it is necessary to make a careful analysis of their content. Arithmetic, for example, is a subject in which the drill type of project may possibly be devised; history lends itself to the problematic or reflective thinking type; science and language, as well as other school subjects which are not commonly employed in project teaching, offer advantages and opportunities for organizing projects. Wilson and Wilson [1] recognize three types of materials out of which

[1] WILSON, H. B., and WILSON, G. M.—*The Motivation of School Work.* Houghton, Mifflin, 1921, pp. 253–57.

projects may originate. These are the problem type, the drill type, and the appreciative type. The following list is illustrative of project possibilities in the different school subjects. It is virtually the list suggested by Wilson and Wilson with a few modifications.

School Subjects Illustrative of Project Possibilities

1. Agriculture. Growing an acre of corn, caring for a hive of bees, or raising a litter of pigs.
2. Manual Training. Building a corncrib, a hoghouse, or a library table.
3. Home Economics. Making a garment or preparing a luncheon.
4. Physics. Building a storage battery or erecting a wireless outfit.
5. Botany. Charting the weeds of a community and planning and executing a campaign of eradication.
6. Geography. Making a products map of a state.
7. Literature. Dramatizing a story.
8. History. Organizing a state senate or a Thanksgiving pageant.
9. Arithmetic. Attaining a certain degree of skill in calculating numbers.
10. Art. Making an illustrative booklet or a picture.
11. Latin. Celebrating the Saturnalia.

This list is suggestive of rich opportunities for purposeful activities.

The chief objection to the activity unit, in the opinion of many, is its neglect of systematic guidance in the study of certain well-defined fields such as history and geography. Study of the suggested units, at least in their early stages, will show widely varying types of units, covering many different fields, but at times without any very well-defined plan, even of an experimental nature. To many, such experimental studies seem interesting because of their freshness and their uniqueness, but not as yet to have been sufficiently well coördinated into a well-rounded curriculum. It is also

claimed that such units demand a type of ability on the part of teachers which is, as yet, not possessed by the average classroom teacher. If there really are types of knowledge and skill which children need to gain, say these critics of the method, it is not likely that they can be gained consistently by such means.

Interest and integrated activities. In the problem, project, and subject units, interest in the unit is developed by the teacher. In the activity unit, at least theoretically, interest is intrinsic. The subject unit is generally introduced carefully with an approach, including preparation and presentation. In the activity unit the approach is often made just as certainly, but the teacher is supposed to take advantage of interests which arise in the life of the child and create situations in which those interests may be allowed to develop.

The project unit and the activity unit theoretically start with a felt need or difficulty. Interest is generated in the unit because of a real life situation which has developed. The unit demands planning and purposing on the part of the pupils. It represents, therefore, a natural situation for the location of materials, assimilation, creative activity, and organization of knowledge. It is unnecessary to *motivate* because the activity carries its own motivation. In actual practice this idea is often far from realized. If each child could follow his own bent without interference from others that might be possible. How much compulsion is present when a group elects to study Indian life all depends on how many children in the group actually want to study Indian life or become interested as they go along. It is quite conceivable that many children are quite as much coerced in the activity unit as in the subject unit.

In the subject unit, it is recognized that it will generally

be necessary to develop an approach to the unit. Children are not always ready or willing to study *Colonial Life*, or *Children of Other Lands* when that is the order of the day. The teacher, therefore, must develop an approach and place the unit before the children in a favorable light. There is, then, a definite preparation for the study of a unit, a presentation of the problem, and a survey of present knowledge in order to secure coöperation on the part of the child and develop an interest in the unit.

To the writers it seems that in either case a good deal of management on the part of the teacher is necessary. Children's interests and needs vary. Compromise is necessary. The teacher is the best judge as to what the children should study. It is her duty, therefore, to guide them as skillfully as she can to study that which seems worth studying. The art of guidance is here especially necessary.

Directing independent study. In connection with the activity unit the old terms of assignment, recitation, and study seem to have been, in many cases at least, largely discarded. If children develop their own units and voluntarily undertake activities, there is then no need for the assignment of the older type. Present knowledge of the nature of children makes necessary the recognition of the fact that it is desirable to obtain their voluntary coöperation in so far as that is possible. The teacher, as director of the activity, needs to guide the independent work and study activities. In the activity unit this may be quite informal, yet it is just as real as in the traditional school. Pupils are given books to read, problems to work, and the like, just as in any other school. The art of assigning work is, then, very important.

In the use of the subject unit, oral assignments are often supplemented by the use of study guides, workbooks, or

other carefully organized materials which constitute, in effect, new types of assignment. Pupils follow their guidance and work independently on the location, assimilation, organization, and retention of ideas. The units of work are carefully planned, revised, improved, and changed as needed to meet the demands of the pupils. By many, such systematic instruction is regarded as the best example of the development of the teaching art that we have. Others feel that there is little improvement in such guidance over the subject teaching of the traditional school, except in the matter of techniques, and that fundamental problems of the curriculum are left untouched.

In either the subject plan or the activity plan, it is important that the teacher take great care to develop challenging situations in which pupils may voluntarily undertake activities. Under ideal conditions, pupils may be expected to develop ability to undertake assignments of work voluntarily. But, when they are unable to find their own problems, it is the teacher's duty to organize and direct their learning so that it is effective. Children do not have the experience necessary to choose activities for themselves in complex fields, nor can they always know how to proceed even though they desire to do so. It is the teacher's duty, through effective assignment of activities, to provide profitable experiences for her pupils.

Class activities and integrated units. In all kinds of integrated activities the recitation or class period is largely a time for socialized discussion or work directed by the teacher. The teacher teaches, explains, directs, supervises, and evaluates the work done by the pupils.. She is a director of activities. The recitation consists no longer of mere repetition of what has been learned from a book. Pupils report, discuss, question, write, draw, or in other ways carry on their

activity. There is no time wasted in needless repetition of that which is already known. Sometimes the period is one of planning chiefly; sometimes it is directed study; sometimes it is reporting, discussion, and organization; sometimes it is devoted to examination, review, or practice.

Class activities in connection with integrated units are generally informal and socialized. When subject units are followed there may be a somewhat more formal plan. One day may be devoted to attacking the problem and understanding it; one day may be devoted to assignment and survey testing; pupils may then work for several days organizing and assimilating their material. Finally a time comes for discussion and organization of materials. After that some time may be devoted to examination or testing. Pupils may work individually or in groups. Sometimes the exchange of ideas is necessary; at others individual work is the best plan. At all times, however, there is an informal and democratic atmosphere with pupils and teacher working together, but with the teacher always as the guide and director of activities.

This deformalizing and naturalizing of class activities is an outgrowth of the idea that the school is a social institution and that pupils should learn to live together in a friendly and helpful way. There is no need for a school to engage in a radical reorganization of its curriculum in order to develop class activities of the kind described. It is possible, on the other hand, to conduct integrated activities in such a manner that they are not in any way different in spirit from the old type of militaristic school.

Appraising results. In schools organized on either the subject or the activity plan, periods of appraisal are necessary. Checking results in the subject school is generally a matter of examination. Informal objective tests or essay

examinations are often used to test the degree to which the child has mastered subject matter and achieved skill. In the activity school, tests may also be used. Appraisal is often made, however, on a judgment basis. In some experimental schools organized on the activity basis, extensive surveys involving objective tests are used. In such schools, as well as in some subject schools, the development of attitudes and traits is often appraised either on a formal or on an informal basis. In a concrete project, the product itself may be carefully observed, measured, or scored to see whether or not the result has been satisfactory.

Often a check-list organized by the pupils themselves is an effective device for the self-appraisal of results achieved. Such a check-list is suggested here as an aid to study:

A Student's Check-List for Measurement of an Activity

Directions. Encircle "YES" if you observed any of the following conditions in solving your project; encircle "NO" if you did not observe them.

1. Did the activity originate with the class? . . . . YES NO
2. Did it grow out of a felt need to do something worth while? . . . . YES NO
3. Was it interesting to you? . . . . YES NO
4. Did you ever have any similar experience either at home or school? . . . . YES NO
5. Were you enthusiastic in finding out all you could about the problem? . . . . YES NO
6. Did the activity furnish new experiences for you? YES NO
7. Did you develop any skill in your experience with the activity? . . . . YES NO
8. Did the activity demand reading and study in many school subjects of your grade? . . . . YES NO
9. Did you personally investigate some phase of the problem? . . . . YES NO
10. Did you have specific directions to follow? . . . . . . YES NO

11. Did you learn to keep records? . . . . YES NO
12. Did you make reports of your investigations and study to other members of the class? . . . . YES NO
13. Did you obtain assistance from other members of the class in gathering your data and organizing your materials? . . . . YES NO
14. Were you a partner in formulating plans for studying the unit? . . . . YES NO
15. Did you learn to write, spell, read, compose, or calculate, more effectively as a result of your experience with the unit? . . . . YES NO
16. Did you feel that much time and effort were wasted in the study of the unit? . . . . YES NO
17. Could you have improved on the plan of investigation and study of the project were you to do it over again or engage in a similar activity? . . . . YES NO
18. Could you make use of the knowledge you gained through your experience with the unit? . . . . YES NO
19. Did you feel that you had accomplished something very definite and worth while when you finished this unit? . . . . YES NO

Outcomes. The important outcomes of activity units may be considered the concomitant learnings which have resulted from them. These are the immeasurable results of the work, such as habits of study, skill in planning and organizing, attitudes, traits, and many other intangible by-products which are not usually recognized. The more tangible learning may be regarded as the subject matter mastered, or the concrete object produced. Another important outcome of such units is the suggestions for future activities which naturally arise from the development of the unit. Indirect outcomes of such units are added skill in writing, composition, drawing, painting, calculating, planning, and organizing.

Subject units place a higher value upon the mastery of subject matter than do activity units. They do not, however,

necessarily minimize the concomitant learnings. The development of mastery is one of the most important outcomes of these units.

Summary. Integrated activities are the new type of organized learning and teaching procedures in which children learn by wholes rather than by isolated and unrelated fragments. They represent the attempt of recent thinkers to overcome the evils of education which have been due to specialization of knowledge. They are represented in the modern school by project, problem, subject units, and activity units. Project and problem units represent the earlier developments; subject and activity units the later. The people who develop subject units are quite sharply differentiated in opinion from those who believe in activity units. Subject units are organized to develop knowledge and skill to a point of mastery. Activity units are developed for the purpose of developing lifelike children's activities which are of maximum value to children. Each of these types of organization has its adherents. In connection with each there is a marked disposition to direct the learning activities of children more expertly and more in accordance with modern theories of learning. Class activities in both types of unit organization are more informal and socialized. The appraisal of results in both types of activities may be carried on both by the use of objective tests and by subjective opinion. Public schools in general tend to adhere to the subject curriculum, rather than to the new type of activity curriculum.

STUDY QUESTIONS

1. What is an integrated activity?
2. What is a project unit?
3. What is a problem unit?
4. What is a subject unit?

5. What is an activity unit?

6. What are the advantages and disadvantages of each type of unit?

7. How is each type of unit organized?

8. How is subject matter used in connection with each type of unit?

9. In what ways does the direction of independent work differ in the two broadly contrasted types of units?

10. How are class activities conducted in connection with the activity unit?

11. How do class activities in the subject unit differ from those in the activity unit?

12. How may the results of teaching and learning be appraised in the use of the activity unit? How with the subject unit?

13. What are the outcomes of each type of unit?

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